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A THOUSAND DAYS IN
THE ARCTIC

FREDERICK G. JACKSON

After a Photograph by Lambert Weston & Son, Folkestone

ALFRED C. HARMSWORTH

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A THOUSAND DAYS IN THE ARCTIC

BY

FREDERICK G. JACKSON

KNIGHT, FIRST CLASS, OF THE ROYAL ORDER OF ST. OLAF; GOLD
MEDALLIST OF THE GEOGRAPHICAL SOCIETY OF PARIS; HON.
CORRESPONDING MEMBER OF THE AMERICAN GEOGRAPHICAL
SOCIETY; HON. CORRESPONDING MEMBER OF THE SOCIETA
GEOGRAFICA ITALIANA, ETC.; AUTHOR OF
"THE GREAT FROZEN LAND," ETC.

WITH PREFACE BY

ADMIRAL SIR F. LEOPOLD McCLINTOCK

R.N., K.C.B., F.R.S., LL.D.

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BY THE AUTHOR

WITH FIVE ORIGINAL MAPS

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TO
ALFRED C. HARMSWORTH

P R E F A C E

THE remarkable revival of Arctic exploration which took place in 1818 has continued, with more or less activity, to the present time, and yet the Arctic regions seem to be now even more attractive than ever.

Mr. Frederick G. Jackson, the narrator of this the latest of Arctic voyages, sailed from the Thames in July 1894, in command of an expedition which he successfully conducted for three years.

By the great generosity and public spirit of Mr. Alfred Harmsworth, Mr. Jackson, an enterprising young Englishman, was equipped and sent out to make a thorough scientific exploration of the newly discovered Franz Josef Land; only some parts of its southern shores being then known, and the hope being reasonably entertained that it might extend far to the northward, and therefore afford facilities for a nearer approach to the North Pole than had hitherto been accomplished.

Assisted by a small but carefully selected staff of scientific observers, Mr. Jackson set about his most arduous undertaking. He determined the geographical limits of this Land, which he found to consist of numerous islands, of no very great extent in any direction; consequently, the idea of gaining a very high latitude was abandoned, and the efforts of the explorers were concen-

trated upon the thorough scientific examination of the group.

This work was carried on under the most difficult conditions, owing to the rapid currents between the islands, which kept the ice almost constantly in motion, and to the sudden and extreme changes of temperature, from intense frost to rapid thaw; these most trying changes being far in excess of those experienced in other parts of the Arctic regions.

Jackson cannot be too highly praised for his cheerful endurance of three such years, nor for the tenacity with which he adhered to his purpose of carrying on scientific observations, and collecting specimens in every department of natural science, which these islands and the surrounding seas could illustrate. This long series of magnetical, meteorological, and other observations, together with the great and interesting collections of specimens made, amply repay the outlay of the Jackson-Harmsworth Expedition, which will long be remembered by the scientists of all nations for its rich contributions to their store of knowledge.

On September 8, 1894, Jackson established his winter quarters upon Northbrook Island, perhaps the most southern and western of the group. Here he erected his log hut, naming it "Elmwood." His provisions were here stored, and it became the centre of his exploring operations. As already mentioned, the strong currents prevented the formation of permanent ice; and to the space of water thus left walruses, bears and seals resorted in abundance, affording a constant supply of fresh meat, which kept the party in admirable health.

The absolute solitude of Jackson and his six companions was only twice broken during the three years of residence at "Elmwood"—once by the *Windward*, which

vessel, having been compelled to pass the winter of 1894 at Franz Josef Land, returned there with supplies on July 26, 1896; and previously, on June 17 of the same year, by Dr. Nansen and his companion, Lieutenant F. H. Johansen, who arrived at "Elmwood" in their kayaks.

These intrepid explorers had left their winter hut on May 19 on an islet in latitude $81^{\circ} 4' N.$, and had paddled down to the south-west through the British Channel, between the several islands and the floating ice, for about one hundred miles, in the hope of reaching Spitzbergen and the small vessels which visit it every summer from Norway. Each night they had hauled their kayaks up on the ice, on which they rested, and awaited a favourable opportunity to proceed. But they were now about to enter upon far more exposed navigation, for two hundred miles of ocean, more or less encumbered by ice, intervened between them and Spitzbergen. Their frail, canvas-covered kayaks were only 12 ft. long, about $2\frac{1}{4}$ ft. wide, and about $1\frac{1}{4}$ ft. deep; they were covered over, with the exception of a round hole in which the occupant was seated, working his double-bladed paddle. Unlike a boat, these kayaks did not admit of any change of position for rest, &c.

This brief description may afford some idea of the desperate outlook before Nansen and Johansen, and from which they were relieved by their accidental—one might indeed say Providential—meeting with Jackson and his party.

It can hardly be imagined with what a hearty goodwill our English party received the wayfarers, and extended to them the utmost hospitality in their power. In Dr. Nansen's description of their meeting on the ice, he says of Jackson: "He seized my hand and shook it

again, while his whole face became one smile of welcome."

The *Windward*, having landed her supplies, embarked Nansen and Johansen, and sailed on August 7, and landed them at Vardo on August 13, 1896.

In the summer of 1897 the *Windward* once more visited Franz Josef Land, and this time brought home Jackson and his party.

But few explorers have ever had the opportunity of passing three consecutive years in the Arctic regions, remote from human beings. I cannot recall any instance of this having ever been done, when escape from it was *possible*. Yet this feat Jackson and his companions cheerfully accomplished, though they had a yearly opportunity of returning by the *Windward*. Truly it may be said that the spirit of enterprise and hardy adventure is as active amongst us as it was in the days of Queen Elizabeth.

I feel confident that all who read Mr. Jackson's narrative will heartily endorse this opinion.

F. L. McCLINTOCK.

AUTHOR'S NOTE

THIS is an unvarnished tale of a thousand consecutive days spent in the Arctic, printed almost word for word as it was written—while the facts and impressions were fresh in my memory—in our hut, or tent, when on sledging and boating journeys in Franz Josef Land.

It is a simple, true account and statement of facts incident to our life and work there—plain facts, penned by a plain man.

F. G. J.

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A THOUSAND DAYS IN THE ARCTIC

CHAPTER I

INTRODUCTION

It was in August, 1873, that the land afterwards known as Franz Josef Land was first accidentally discovered by the Austro-Hungarian Expedition under the leadership of Weyprecht and Payer. In endeavouring to pass round the northern end of Novaya Zemlia to discover the North-East Passage, their ship, the *Tegethoff*, became beset in the ice, and, after drifting for twelve months, an entirely new land came in sight, and the floe upon which the ship had been crushed up was frozen to the land-ice of Wilczek Island. The following spring Payer made three plucky and adventurous journeys up and in the neighbourhood of what he then named Austria Sound. After a very hard and perilous journey, they were able to beat a retreat to Novaya Zemlia in their boats, leaving the ship to its fate on the shores of Franz Josef Land, being quite of the opinion that the country was unapproachable by legitimate methods. Payer had reached the latitude of $82^{\circ} 5'$ north, and was under the impression that he had seen land still further to the north, in and beyond the 83rd degree, and land to the north-west reaching almost as far.

It was upon these observations that Arctic authorities advocated this route as the best for exploring to the northward, and upon which I formulated my plans in the latter end of 1892. Unfortunately our expectations in this respect were fated to disappointment by the non-extension of the land to the north, and we had not been long in Franz Josef Land before we discovered that instead of this country being of continental dimensions, as many supposed it to be, it is only an archipelago of comparatively small islands ; and this unfortunately quite upset the basis upon which my plans for pushing north were founded, which were to follow the land, and form depôts of provisions as far as it reached.

Mr. B. Leigh Smith, the well-known Arctic navigator, in 1880 and 1881 visited Franz Josef Land, and continued Payer's discoveries westwards, doing exceedingly good work ; and I am glad to be able to testify to the accuracy of his map and observations, which are remarkably correct. On his second visit he lost his ship, the *Eira*, and spent the winter there under very trying and rough circumstances, making a plucky retreat to Novaya Zemlia in the following summer. He and Dr. William Neale are very much to be congratulated upon their good management and tact in keeping the men in good discipline and well, under very difficult conditions indeed. Up to the time of Mr. Smith's voyages, Franz Josef Land was considered unapproachable by ship, and, until the journeys of my expedition in the *Windward* had proved to the contrary, its shores were looked upon by most Arctic authorities as unreachable, except during especially favourable and exceptional years.

It was in the latter end of 1892 that I first published my plans, which, I am glad to say, met with the approval of our Arctic authorities. These embraced

not only an advance in a northerly direction, but the mapping-in of the coast-lines of Franz Josef Land, a thorough examination of that country, in taking scientific observations, and making collections generally. These plans we have, I am glad to say, been able to carry out ; and scientific observations, which I think I may be excused for describing as valuable, have been carried on uninterruptedly for three years. We have also practically completed the map of Franz Josef Land, and settled the Gillis Land question.

For some time the sinews of war were conspicuous by their absence, and little encouragement given. Consequently in 1893 I determined to take a journey to the Yugor Straits with the object of exploring Waigatz Island, and the Bolshaia Zemelskija Tundra, to the south of it, and at the same time thoroughly test the equipment which I intended to use on my expedition to Franz Josef Land. This I accomplished, extending my journey round the White Sea and through Lapland, to enable me to see something of the methods of the Lapps in addition to those of the Samoyads, with whom I had been travelling. It was on this journey that I became acquainted with the use of reindeer as draught animals, and also fell in with the hardy Russian ponies which did us such sovereign service in the Franz Josef Land expedition ; and I should consider the trouble of that former journey amply repaid if meeting with these horses had been its only result. Ponies can be used to very great advantage in Arctic exploration, and I am more than satisfied with the results of my experiments with them. At Archangel I received a telegram to return immediately, as Mr. Alfred Harmsworth was generously offering to provide the necessary, and long-sought funds, for my proposed expedition. I considered,

however, that I was serving the interests of the expedition best by returning by the rather longer route, viâ the White Sea and through Lapland. The next five months were spent in hurried preparations.

After my return to London the *Windward* was bought, and alterations effected in her; a log-hut was made and erected, on trial, at Archangel, and furs purchased there for us. For this service I am indebted to the energy and kindness of Mr. Henry Cooke, H.M.'s Vice-Consul there. Sledges, ski, &c., and more furs were obtained for us in Norway by Mr. Alexander Nansen, the brother of the explorer, and Mr. Joseph Jeffreson. Tinned foods of all kinds were examined by me, and selected with the help of Mr. Harkness, of Somerset House; but I relied largely upon obtaining fresh meat in Franz Josef Land by shooting bears and walrus, as I consider fresh meat to be one of the greatest factors in procuring health. This expectation, I am glad to say, has been entirely fulfilled. With the help and advice of our medical man, Dr. Koettlitz, I am glad to be able to say that in three years not one of us had an hour's illness, and I never knew a single man knock off work on account of indisposition during that time. Through the help and advice of Dr. Koettlitz all tinned meats that were used were carefully examined before being placed on the table, either by him or myself, anything in the least degree tainted was rejected, and placed on the roof to be out of the reach of the dogs. All water used in food was carefully boiled, exercise was regularly taken, and every one was always busy.

My party consisted of eight men, none of whom had previous Arctic experience—

1. Albert B. Armitage, who had charge of the astronomical, meteorological and magnetic observations.

INTRODUCTION

5

2. Reginald Koettlitz, M.R.C.S., L.R.C.P., &c., our doctor and geologist.
3. Harry Fisher, our botanist and zoologist.
4. J. F. Child, mineralogist.
5. H. A. H. Dunsford.
6. J. W. Heyward.
7. K. Blomkvist.
8. S. Burgess.

WEIGHTS AND MEASUREMENTS ON JULY 16, 1894.

	Height.		Weight.
Frederick G. Jackson . . .	6 ft. $\frac{1}{2}$ in.	...	13 st. 4 lbs.
Albert B. Armitage . . .	5 „ 10 „	...	12 „ 10 „
Reginald Koettlitz . . .	6 „ 1 $\frac{3}{4}$ „	...	12 „ 4 „
Harry Fisher . . .	5 „ 11 „	...	11 „ 7 „
Josiah F. Child . . .	5 „ 9 „	...	12 „ 1 $\frac{1}{2}$ „
John W. Heyward . . .	5 „ 7 $\frac{1}{4}$ „	...	10 „ 3 „

CHAPTER II

OUR START

July 12th, 1894, Thursday.—Arrived on board the *Windward* about noon and set off down the river almost immediately. The boys of the *Worcester* manned the yards and cheered us, as did also those of the *Arethusa*, whose band also played us a parting air. Amid the good wishes and the cheers of our friends we let go from the buoy and slowly steamed down the river. Child was missing when we sailed but we called at Gravesend as we found that the signal code had not come on board—Armitage going on shore to buy one. Here Child put in an appearance, having missed the 10.25 A.M. train at Cannon Street and arrived at Greenhithe after we had gone. He had come on by train to Gravesend, and just succeeded in catching us up.

We got clear of the river about 4 P.M. having a fresh S.W. breeze to help us on our way north. We have on board as passengers to Archangel, Mr. Herbert Ward, Professor Boulger, and Mr. Arthur Montefiore.

Mrs. Harmsworth has made my cabin and the saloon very pretty with the pictures she has so kindly put on the walls for me, which give them a very home-like appearance.

July 13th, Friday.—A fresh breeze from S.W. Clear, fine weather. A large proportion of the party sea-sick. I fortunately feel quite fit and well at present. The pilot boat left us off Lowestoft thus breaking the last link that

connects us with home, and as we watch her slowly disappear on the horizon we wonder which of us or whether any of us will see her again, and how many years hence.

July 14th, Saturday.—Fine, clear sky. No wind. Herbert Ward is very busy all day sketching different members of the party and objects of interest on board.

I find now from the captain that it was Mrs. Harms-

“BREAKING THE LAST LINK THAT CONNECTS US WITH HOME”

worth who was so kind as to put the pretty useful articles in my cabin for me. He had been very mysterious about it before when I had questioned him, and said I should hear by-and-by.

July 15th, Sunday.—Clear, cloudless sky. No wind. Service was conducted on the quarter-deck at 11 A.M.

July 16th, Monday.—Clear, sunny weather. No wind. Ran into a swell towards afternoon, causing more trouble amongst the sea-sick brigade. They are very

plucky however, and some determinedly stick to their pipes through the most awful upheavals of nature.

July 17th, Tuesday.—Head wind from N.E. The captain advises going inside the fjords as the very small power of the *Windward* will not make headway against a head sea, which will be avoided by going inside. The course will be as short inside as outside, the only question is that of pilotage fees (about £10 all the way to the North Cape, I am told). Settled to go inside the fjords.

July 19th, Thursday.—Light N.E. wind. Considerable N. swell. Sighted land at 10 A.M. at Nogvid fjord, took pilot on board at 8.30. Ship did four knots an hour as soon as we got into smooth water inside the islands. The pilot would only take us as far as Christiansund which he undertook to do for forty kröner. At Christiansund he tells us we can obtain a pilot to go to the North Cape.

July 20th, Friday.—Northerly breeze (light). Passed up the fjords towards Christiansund, opposite which we arrived at 2.30 P.M. I allowed no one to go ashore except the captain, who did so to engage a pilot. While waiting, the Harbour Master and Lloyds Agent came on board. We heard that news has been received that Wellman's party had met with the pack in 80° N. and had made use of Pyke's house on Danes Island as a depôt. Wired to Mr. Cooke, H.M. Vice-Consul in Archangel, to get twelve tons of hay compressed for us.

Left Christiansund at 3.45 P.M. as soon as the pilot came on board. (Pilots charge 300 k. to the North Cape.)

July 22nd, Sunday.—Faint breeze from N.N.W. Overcast sky most of to-day. Prayers read at 11 A.M. on the quarter-deck. Continued our course north through the fjords.

Crossed the Arctic Circle at a small village called Silsuvig about 8 P.M. Ran up the blue ensign and we all drank to it. Ward and I took photographs of the exact spot where the circle cuts which is marked by a beacon.

Continued writing my book, which I have named *Samoyad and Tundra*.*

Many of the high rocky hills in the fjords show very distinct signs of glacier action.

July 24th, Tuesday.—Fine, clear, sunny day. Faint N. breeze. Passed one or two small steamers, and the Mail steamer *Kong Harold*, in which I had come from Vadso to Tromso last January. She saluted and gave us quite an ovation—I know all the officers on board. Pursued our course north through the fjords. Opened the main hatch and got out various portions of our outfit, which will be required before we reach Franz Josef Land. Passed Tromso at 11.30 P.M. Stopped for three minutes and sent letters on shore by a boat which came alongside. Sent two “wires” to Harmsworth.

July 25th, Wednesday.—Passed several small glaciers flowing down the hills towards the fjords. Fine and cloudy at intervals. Stiff north breeze towards night.

Passed Hammerfest about 9 P.M.

July 26th, Thursday.—Fine, clear weather. Northerly breeze. Put the pilot down at Haenningvaag on Mageoere Island on which the North Cape is situated. When about fifteen miles west of the Nord Kyn the valve of the safety valve stuck (at 4.30 P.M.) and blew out all the steam. Set all sail and went on the starboard tack while repairing the valve. Got under steam again at 7.30 P.M. Saw a few “finner” whalers. Rounded the Nord Kyn.

* Since entitled “The Great Frozen Land” by my publishers after my departure from civilisation.

July 31st, Tuesday.—Picked up pilot off the light-ship and proceeded up the Dwina to Archangel. Were cheered by shipping. At 7 P.M. arrived off Solombola.

Solombola is composed chiefly of ballast we are told from British ships prior to 1854 giving an idea of the trade between this country and Northern Russia at that time.

Let go anchor. Proceeded on shore in Schmidt's launch. Sent off wires to Harmsworth and my mother. Met Rev. C. Pascoe, and Mr. Wilton, and Vice-Consul Cooke joined us later. Drove up to the Consulate and received letters and papers from home, and had a zakoushka there. Took four drouskis which raced all the way back to the ship reaching it about 2 A.M. Rise and fall of tide about 2 ft. 5 in. at Archangel.

August 1st, Wednesday.—Fine, clear weather, with fresh gale from north. At 8.30 A.M. received an official visit from H.I.M. Cruiser *Vestnik*—the first officer coming on board to call—which I returned at 11 A.M. Went to Schmidt's office and Landtmann's store on business with Cooke, and in the afternoon made sundry purchases.

The Governor had intimated that he would receive the members of the Expedition at 5 P.M., at which hour we and also the visitors called upon him, and he invited us to a party at his house on the following evening, to meet the officers of the *Vestnik*. We all dined together in the evening at the German Club, and afterwards went to a village fête on an island in the Dwina, going by steamer there. We are told that we British take our pleasures sadly, but of all the melancholy entertainments I ever witnessed, this certainly was the most so. Even the peasant with much vodka on board did not rise to the occasion and get hilarious, but merely exhibited his condition by his uncertain gait and undue affection for his fellow-man.

August 2nd, Thursday.—Writing letters all morning. Transacted business in Archangel in the afternoon. Dined at the Governor's with the members of the Expedition. We were toasted most enthusiastically by our Russian friends, an especial honour being done us by drinking our healths in the Russian punch "jounka" with lights out, a song being sung in our honour. Left about 2.30 A.M., and returned to the *Windward*.

On arriving at the Governor's we first had a "chi peet" (tea); then cards; then zakoushka; then supper. I made inquiries about Samoyad marriage customs of the old heathen times. The Governor tells me the matter was arranged between the families of the man and woman—the man practically buying the girl.

August 3rd, Friday.—The Czaritza's birthday and general holiday. Armitage at 7 A.M., at my request, dressed the ship with bunting, with the Russian flag at the main. Dr. Koettlitz and I went by invitation on board the *Vestnik* to lunch. An Imperial salute of thirty-one guns was fired at noon. They have two bear cubs on board—one Polar and one brown bear. I noticed a great difference in the behaviour of the two. The brown cub being far more civilised and gentle-mannered than its white brother, which was very disagreeable and bad tempered. We dined at the German Club, and went to the only theatre, where a drama of three hundred years ago was played, lasting from 8 P.M. to 1.30 A.M. on the following morning. We then returned on board the *Windward* and sent out invitations to a lunch which I am giving to-morrow as some small recognition for the great hospitality we have met with on all hands.

August 4th, Saturday.—Finished my letters. Gave a lunch on behalf of the Jackson-Harmsworth Polar Expedition at the German Club, which was attended by

the Governor and officials, the captain and officers of the *Vestnik*, and a large number of other friends, and went off most satisfactorily. A number of toasts were enthusiastically proposed and drunk. I proposed that of Governor Englehardt, which was drunk with musical honours, and most enthusiastically.

We lined the entrance to the Club when the Governor and Captain Larin of the *Vestnik* left and loudly cheered them. They have been most courteous and kind to us.

I afterwards went with Cooke and Herbert Ward to complete my purchases.

The Archangel Monastery was burnt down this evening. Dined at the German Club and then returned to the *Windward*. Bought furs and equipment for all the crew, to provide against the possibility of wintering in the North.

August 5th, Sunday.—The Governor, the Captain of the *Vestnik*, and the Commander of the Forces of the Government of Archangel paid us an official visit at 10.30 A.M.

The Governor kindly presented me with three of his photographs—one as Governor, one as Court Chamberlain (Kammorherr), and one in private dress.

Finished my book. The draught of the *Windward* on leaving was 17 feet 6 inches abaft, 14 feet forward.

At 7 P.M. proceeded down the river, being towed by Schmidt's tug, but had to cast anchor just inside the "bar," as we missed the tide. Took on board a Russian carpenter to help us to put up the log-house and to act as interpreter at Kharborova with Rāwing, who has our thirty dogs there. We are fearfully overloaded and the ship looks dangerous.

Mr. A. Montefiore, Professor Boulger, and Mr. Ward

accompanied us down the river, and remained on board through the night. Mr. Pascoe read a short service on board at 1 P.M.

Mr. Cooke and every one at Archangel have been *excessively* good. Executed power of attorney and wrote my signature to one for Mr. Harmsworth in connection with my cooking-stove,* leaving both to be filled in as time is so short and there is no time to complete either.

August 6th, Monday.—Our guests went off by the *Obb*, which passed us at 5 A.M. We gave them cheer after cheer as they left us, and which they returned—the last of our English friends!

And so on the 6th August, 1894, we steamed away from civilisation, turning our steps towards that great white North that has claimed so many lives and baffled so many daring enterprises. We sailed away into the unknown, that unknown so enveloped in mystery. The desire to lift aside the veil of Arctic uncertainty is strongly upon us; my party, nothing daunted by hardships certain to be encountered, are pushing rapidly north, hoping to add to the world's knowledge and the dominions of our Queen—icy and uninhabitable though they may be. Cynics may scoff at discovering tracts of ice-covered wastes. "Of what good are they?" they ask. But my reply is, that Arctic or Ant-Arctic exploration is of every good, if it be only to contend in what has become an international competition. No country is so ready to applaud and reward explorers of other nations, or to show so much generosity as our own, and it will be an evil day for Britain when she ceases to take part in what has become a competition, and is content to yield our place in the race of Arctic discovery, which we

* This was a spirit stove designed by myself, as I could not find any such stove at all satisfactory in the market.

so long have held, and to see strange flags where the "Jack" should wave.

August 7th, Tuesday.—I drew out rules for guidance in case of fire and had three notices posted—in fore-castle, officers' mess, and saloon companion. I am rather fearful of it owing to the quantity of hay on deck, which is not *compressed* as we in England know it.

"How to act in case of Fire."

Copy.

"1. At once rapidly strike the bell from side to side.

"2. The carpenter to attend to hose.

"3. At once use the buckets of water always in readiness on the bridge.

"4. At night the officer on watch is at once to sound the steam whistle by tying it open and then call the captain.

"N.B.—No smoking is allowed on deck excepting forward of the windlass or in the lee-boat abaft the funnel.

"FREDERICK G. JACKSON."

August 10th, Friday.—Entered loose ice at 1 A.M., through which we sailed all day. East winds, overcast, occasional fog. Shot a seal on passing an "ice-piece" in the morning. Cleared the ice about 10 P.M.

August 11th, Saturday.—Moderate north-west winds. Overcast, rainy weather. At 4 A.M. entered more loose ice, passing out about 4.30 A.M.

At 9.30 A.M. we sighted Dolgoi Island, altering our course after sounding (15 fathoms 5 miles west, sand) to pass round the north point. We could see a large cross on N.W. point (hill) of the land. Passed to the north about four miles off. Experienced a southerly current. Sighted Waigatz Island at 4.30 P.M.

Reached the entrance to the Jugorski Schar about 6 P.M., a cairn with a staff on it on the Waigatz shore is a good guide in entering. Passed up at half-speed, sounding frequently. Arrived off the village of Kharborova about 8 P.M., a Samoyad settlement. All the land party and I went ashore. Here I found Råwing, a German, who has been sent by Mr. Wardroper with thirty Ostiak and Samoyad dogs awaiting our arrival, having reached here two days prior to the time named in his contract. He started on his journey with thirty-three dogs, but two died of a disease somewhat like rabies and one ran away.

The great majority are Ostiak dogs of varying appearance ; some stout, heavily boned animals weighing from between fifty and seventy pounds, others leggy and wolf-like in appearance. The colouring is varied from grey to a very dark brown. They all have very thick coats, pricked ears, and are more or less wolfish in disposition, especially in their dealings with each other. The Samoyad dogs, on the other hand, should be entirely white with the exception of the nose, the tail bushy and turned over the back, and the ears pricked. Their weight varies from forty-five to sixty pounds. They much resemble large Pomeranians in appearance.

The great trouble I had with them was their propensity for killing each other. One dog would get into disfavour with the rest of the pack, and become ostracised from canine society. One of them would then pick a quarrel with him, in which he would generally get worsted, as fair play with these dogs, as with some men, is an unknown quantity, and he would then be set upon by the whole pack, and be torn to pieces.

It is very remarkable how a dog would become "marked," which fact he would fully realise, and on his

appearance his companions would prick their ears and by their demeanour say, "Here is the hound; come, let us kill him!" I lost more dogs through this unpleasant propensity than from any other cause, which the most rigid precautions in muzzling, chaining up, and the utmost care generally failed to check entirely. In fact, their canicidal proclivities were a never-failing source of anxiety to me, and I always felt a feeling of relief on learning in the morning that no dog had broken loose in the night and become the cause of a conflict and consequent deaths. They were, however, perfectly well behaved with human beings, although somewhat nervous and shy, and singularly intractable, coming when called exactly when they thought proper, or refusing entirely to notice any order addressed to them.

I went to try and get thirty poods of reindeer meat, but find there is considerable difficulty, as it is a little too early for reindeer meat here. However, a Samoyad undertakes to supply thirty poods of young meat at two roubles per pood (36 lbs.); this is dear. Råwing tells me a long tale through an interpreter of the trouble he has had and the expense he has been put to in reaching here.

We, followed by the few Russian peasant traders, went for a walk in the direction of the Nikolski river. I drove five reindeer in a sledge for some distance, taking one of my men with me on it.

Returned on board about midnight. A clear, fine evening. I am not sending letters from here, as it is a hundred to one against them reaching Archangel, as the Samoyads are indifferent postmen, and in all probability any letters sent would never reach their destinations. It is needless to say that there is nothing approaching a post across the Great Tundra to the South, between here and the Petchora river.

A TEAM OF REINDER

August 12th, Sunday.—The doctor read prayers in the cabin at 10 A.M. at my request, and I had the crew called a'ft. We all then went ashore—to botanise, geologise, photograph, &c., and to try the dogs in a reindeer sledge. To those that pictured dog-driving as described in some boys' books—an Esquimaux seated on a sledge with a long whip in his hand, being carried along without effort at the rate of ten or twelve miles an hour by six or eight willing animals—this their first experience of dog-driving proved an unpleasant surprise. The picture was changed to an unwilling, howling, and snapping pack, their traces always mixed up into inextricable knots, and the heated driver with ruffled temper running alongside, vainly endeavouring to separate his belligerent team and induce them to attend to business.

I am told that the meat ordered cannot be got, as the Samoyad has cleared out to Waigatz Island. Other meat, however, is promised later on in the day, and will be ready to go on board early to-morrow, they say. I am particularly anxious to make a good start with fresh provisions. Very foggy all day. Spent the day bargaining with the Samoyads, and learning further particulars as to their manners and customs.

I hear that although the Waigatz and Bolshaia Zemelskija Tundra Samoyads call their only god "Chadee," the Siberian Samoyads name him "Shitan." There is only one god, who is both good and bad. Their high priests are called "Taad-dee-ve," who also are doctors, although they use no medicines, but ask "Chadee" to cure the patient or enable them to do so.

When sacrifices are performed to "Chadee," the Samoyads take a reindeer (which has never been allowed to do any work, but has been kept and fattened for the purpose for years), and go to their holy spot called

"Yon-pa-ha-py," put up a choom, and having closed it, light a fire, making it very full of smoke. The "Taad-dee-ve" then proceeds to yell, stands on one leg, and beats a drum, in which he is joined by the other Samoyads when he is exhausted. This goes on nearly all night, until the "Taad-dee-ve" falls into a so-called trance, in which he is supposed to have converse with "Chadee" or "Shitan," and learn his pleasure, after which he gives advice. During the ceremony the reindeer, which has been tied up outside to a stake, is killed by degrees in a most cruel manner, each Samoyad inflicting a slight wound upon it until it dies. They then cut out the windpipe, which is considered a titbit, and this is offered to "Chadee," the rest being eaten by the Samoyads themselves. Human sacrifice is never now offered, and it is doubtful if it ever was.

The rings of stones to be seen on Waigatz are called "Yalmal Haishie," and are so placed to weigh down their chooms or tents. "Yon-pa-ha-py" is a hill in Waigatz which is a favourite place of worship, and Samoyads come thousands of versts to worship here. There are said to be two deep holes in Waigatz, one on the crest of a hill a little inland from Varonoff Noss, at which the Samoyads worship "Chadee." They will never take strangers to places where they worship. The hole is seven feet in diameter and of unknown depth, as they will not sound it. On the old Samoyad burying-places the dead man's "lodka," "loegia," sledge, &c., were always placed. The sledge is placed there in the same condition as that in which he left it, and if the sledges usually seen are broken, it is merely accidental.

The Russian priests have only been partially successful in converting the Samoyads to Christianity, the inducement often being a red shirt and a pair of

trousers, which are given to a Samoyad by the priest after being baptized. In many cases the baptized Samoyads go and wash themselves to purge themselves

A GROUP OF SAMOYADS AT DINNER

of the baptism, laughingly remarking that they are now as good as ever they were, and richer by a shirt and trousers.

We had tea with the Russian priest—a man named Popoff—a vast improvement on the one of last year, when I visited Khaborova first.

The tide sets from the Kara Sea very fast west (at four to five knots), and is bringing great quantities of ice

AN ANCIENT-HEATHEN SAMOYAD BURIAL TOMB

through the straits. I secured a Samoyad skull to-day from a very old burial-place, after photographing the tomb.

August 13th, Monday.—A very dense fog on. I went ashore to see about the meat, the Captain and the members of the land party accompanying me. The ship

was quite obscured by the fog. The meat had not arrived, and I am now told it can't be got. After much bother and showing of the Governor's paper, it is promised to-day, and I sent Råwing off with the Samoyads to pick good animals and to see that fair weight is given, and to hurry things up generally.

The steam whistle on the ship having been blown several times, I started off by myself in a Samoyad "lodka" to see if all was going on right—the fog being too thick to see the ship three-quarters of a mile off. I soon found a very fast tide was running from east to west, carrying large quantities of heavy ice with it, and after a hard row I managed to get on board, finding the ship by the sound of the whistle. I found that Armitage and another man had just got on board, but had lost their boat in doing so. The tide was running at the rate of four or five knots an hour, carrying heavy ice against the anchor chains. The anchor was dragging, and we feared that the ship would go on shore, and altogether things looked very unpleasant. After about three hours of this kind of thing the tide slackened a little and the fog lifted a bit, and I set off in the sixteen-foot Norwegian boat with Armitage to fetch the Captain, who was on shore still, and quite ignorant of what was passing. We found him in a great stew about my safety, as he had not liked my embarking in the "lodka" alone.

After we got on board again the anchor was weighed, and in charge of the pilot she proceeded to steam towards the village of Kharborova, having drifted about a mile and a-half down the straits. I advised steaming down to the bay at the south-west side of Waigatz, or else to anchor outside the straits behind the island, but our pilot assured me that it would be safer to lie opposite the village near in to shore, as he assured me there is plenty

of water there, and as he had been through the straits five or six times before, I assented, as I imagined that he knew best. The lead was kept going all the time, and I left the bridge for a moment to go below, the pilot saying that he should anchor a few dozen yards ahead of where we then were. There were five and a-half fathoms of water at this point. About three minutes after going below I heard three fathoms called, and at once rushed on deck, but only to find the *Windward* grounded by a length and a-half on a mud-bank. Full speed astern was tried for an hour without moving her an inch. I then went ashore to ascertain the present state of the tide and the time of the next high water. I found that the ship must have gone ashore at high water, and the next full tide would be at 3 A.M. The ship went aground at 3.30 P.M. This is very pleasant!

I turned out the land party, and proceeded to lighten the ship by putting the coal in sacks on the quarter-deck ashore in the boats, working till late in the evening, an anchor was run out astern with a cable, and a strain put on it with the steam winch. We then awaited the tide at 3 A.M., hoping that then we could steam and warp her off. Every one feels and looks rather glum, and with very good cause, as the situation is most serious. There was a turn of the chain round the anchor, which explains its dragging. The fog lifted about 5.30 P.M.

August 14th, Tuesday.—Every one out on deck at 2.30 A.M. Steamed full speed astern and did our best to warp her off, but could not stir her an inch. She is aground in two and three-quarter fathoms of water both fore and aft.

I ascertained that the next full tide is at 3.30 P.M. As it is hopeless to expect to move her this tide, I directed every one to turn in till 7.30 A.M., after which we

had breakfast, and I then set to work with the land party to remove more coal to the shore, which was about three-quarters of a mile off. We worked with a will and most heartily, every one doing his level best. After getting most of the coal off on the port side (on which side there was a list at low water of 45° , so that plates, and dishes, would not remain on the cabin table) we set to work on the starboard side, when she canted over very suddenly to starboard. We worked away on that side until we had got her on nearly a level keel again, and then awaited the rising of the tide, having got nearly forty-five tons of coal on shore, emptied the water tanks, dropped over the bows the heavy anchor with a long length of chain, and placed one anchor between two boats alongside.

About 2.30 P.M. we tried steaming full speed astern and warping. For some time she would not move, but at last started to do so just a little, and finally, much to our delight, got clear of the bank, amid cheers from the land party.

After a hurried lunch, I took all the land-party ashore and proceeded to load up the boats with the coal again—working like niggers, and we were all much the colour of them. One and all of our party did their level best and worked with the heartiest goodwill. I feel very pleased with them.

We got all the coal on board again but about three or four tons. The thirty-one poods of reindeer meat was sent on board to-night.

A peasant came on board complaining that one of the crew had stolen his boots when on the ship. I compensated him, but quite failed to understand how it was he preferred to be without them at the time. Lightning was seen to south-west to-night, but no thunder was heard.

August 15th, Wednesday.—A fine, clear day. Went ashore with the land party, and loaded up the remainder of the coal. Some of the crew have been detailed off to get water on board. As I was determined to get away to-morrow morning I called out the land party and we got a full boat-load of water on board between 9 P.M. and midnight.

I ordered Råwing to bring all the dogs on board, fifteen being chained up aft and fifteen forward. I gave him a testimonial, a rifle and three hundred rounds of ammunition, tea, coffee, a sack of biscuit, tinned meat and butter, and fifteen roubles. He was very pleased, and gave me a copy of a book written by Drontheim about his journey to the Jugorski Schar with Nansen's dogs last year.

I gave all the Russian peasants and Samoyads many presents of provisions, &c., and had them to tea on board; to Ivan Berzoomoff who travelled with me last year I presented a rifle and three hundred and fifty cartridges. I received many little presents in return, of ducks and fish. I purchased two sledges, a number of Samoyad articles, and two Samoyad bitches, which proved to be the sustainers of my pack in Franz Josef Land.

I told Berzoomoff that Mr. Popham will call for the boat he gave me, which is quite safe here in his charge. Both Russians and Samoyads have acted very nicely, and appear glad to see me again.

August 16th, Thursday.—After stowing the hay, at 9 A.M. in fine, clear weather, we proceeded down the straits at "easy ahead," sounding all the way for I insist on this, and got out of the straits about 11 A.M. without further mishap.

I bought four reindeer sledges and sinew for sewing.

A SAMOYAD VILLAGE BEAUTY

West to South-south-west wind. Fine, clear weather till 11 P.M., when a thick fog came on again.

Passed through streams of ice soon after midnight.

I feel thankful to be clear of this spot at last.

August 25th, Saturday.—Steaming north all night with a little water towards the land; Capes Crowther, Grant, and Bell Island sighted about 5.30 this morning. I turned out directly I heard this, and went up into the crow's nest. Franz Josef Land at last in view!

Cape Crowther is a bluff, flat-topped cape, with an ice-cap above, and with glaciers on either side. All the south-west coast appears high and bold, entirely glaciated land, with at infrequent intervals bare, bluff, projecting black headlands of basalt.

About 11 A.M. we were stopped steaming north about thirty miles south of Bell Island by a hard barrier of very heavy ice between us and the land. We "lay to" in a polynia all day, occasionally steaming to avoid ice. Heavy snow at 5 A.M., coming on in storms again occasionally throughout the day. Clear in the early part of the day, but coming on cloudy, misty, and overcast, obscuring the land in the afternoon.

Crowther tells me he has never seen such heavy ice lying against the land at this point before. The east winds have probably brought this heavy ice through between Novaya Zemlia and Franz Josef Land from the Kara Sea.

Difficulties seem to be increasing daily.

August 26th, Sunday.—At twelve midnight, when Crowther came on watch, he and I went up into the crow's nest to see if we couldn't find a passage through the ice, which since morning had separated out again. Steamed up into the throat of the bight, but could get no further as a wide barrier of ice miles in extent separates us from water further in shore.

Crowther insists that it is necessary to retrace our steps for some distance to give the ship room to lie. This, to me, is very much against the grain. "Lay to" again, and waited for the ice to open. Dense fog after 4 A.M. all day. Tied up to a floe, and waited for it to clear. I discussed the advisability of offering bonus money as an incentive if the ship gets in and away home this year. Settled to do so if things don't improve on the fog

THE "WINDWARD" TIED UP TO A FLOE, AUGUST, 1894

lifting. Awfully annoying and tedious this inaction. About 9 P.M. the fog lifted. I at once went to the crow's nest, Crowther following. Found that we had drifted to the west about thirty-five miles, being now abreast of Cape Neale, the ice towards the land being tightly jammed up. As there appears a chance of getting round the back of it by going east, we let go from the floe and steamed S.E.

August 27th, Monday.—About thirty-two miles south

of Cape Grant, the ice looking very close and hard to the north. I decided to offer £85 if the ship gets in to land and away again this autumn. I told the crew that we *must* land, and that I had not the smallest intention of returning to London, but that we should winter it out somewhere. At 10 A.M. Armitage and I again went to the crow's nest. Decided to steam south and east, as there is no chance of getting to Bell Island or to land at all from where we are.

I suggested to Crowther to do this, and he agreed that it is advisable to try east, and endeavour to get round the back of the ice.

Steamed S., S.E., E., and finally S.W. all day along the edge of the tight ice. Armitage and I were most of the day in the crow's nest helping Crowther and "John" to direct the ship's course, as they complain of being short-handed. I told Crowther that I left the ship entirely in his hands in the ice, but that we must reach Franz Josef Land, and repeated what I said yesterday morning, as I wish him to have full control over the crew in working the ship in the ice. We must and shall not be turned back at the eleventh hour.

The sun set to-night.

August 28th, Tuesday.—At 12.30 A.M. Crowther came down from the masthead to say he cannot proceed further east, as there is no lead, and suggests that we had better return to where we started from this morning and wait for a north-west gale to break up the fast ice to the north or a swell from the south-west.

Steamed north-west till 9.30 A.M., and then anchored to a floe in latitude $79^{\circ} 22'$ north, longitude $46^{\circ} 8'$ east. Weather clear, but no sun. Crowther tells me that he thinks the ice has not broken up along the coast this year. Shifted our position twice during the day, owing

to the floe breaking up and ice closing in. Tide set from east to west at least three knots per hour about midnight.

A bear, our first visitor, came down towards the ship about midnight, but would not come close. Armitage and I took the small Norwegian boat and went after him on the floe, but he cleared out before we got near enough for a shot.

Put a bottle overboard with information as to our position and movements, with a request that it be forwarded to Mr. Alfred Harmsworth if picked up.*

August 29th, Wednesday.—Lay anchored to the floe, occasionally moving from one piece of ice to another as necessity required. Calm, westerly airs, overcast sky. Ice showing signs of breaking up. Want a good northerly wind to carry it away south.

Armitage and I took the small Norwegian boat out to try a shot at seals. When out in it we saw a bear at the edge of the floe, which on seeing us proceeded to stalk us; on our pulling through some bay ice he crouched like a cat at the floe edge and then waited for us to approach. We fired a bullet into his neck on getting within thirty yards of him which appeared to astonish him somewhat as he evidently fancied he was going to do the hunting himself. He then took to his heels, two more shots being planted in him as he went, but without stopping him. Although very severely wounded he managed to run over the floe, across which we followed him with one cartridge left, tracking him by his blood-stains as occasionally we lost sight of him owing to hummocks. We pursued him for about three miles when he crossed some water on to another floe, and we had to give up the chase.

* Up to going to press, February 1899, it had not been heard of.

When returning to the ship we had to drag our boat over the floes for some way, owing to the ice, which was in rapid motion, having come down around us. We had some trouble to get on board.

About midnight Crowther came down to tell me that there was a bear on a small floe a short distance off. Armitage and I went off again, and I succeeded in shooting him. This bear also fancied he was going to hunt us until he received a bullet, as he proceeded to stalk us, and appeared much disgusted on the tables being turned.

Young ice is forming rapidly on the sea to-day. The temperature is much colder, and the weather very winterly. We must reach the land soon, or we shall spend the winter in the driving pack, and shall stand a good chance of sharing the same fate as that of the *Tegethoff* and the *Jeanette*. Things don't look a bit nice.

August 30th, Thursday.—Owing to a southerly breeze the ice is moving north towards the land again, and we had to steer south-west to avoid being beset. Calm, overcast, cloudy weather, wind south-west (light), with occasional snow storms, slackening down to a calm towards the afternoon.

About 3 P.M. two bears (she-bear and cub) were seen ahead of us on a floe. They moved across the ice, and took to the water. We steamed down upon them, and shot them from the bows. The meat will be very useful.

About 10.30 Crowther came down from the crow's nest, and told me that the ice north is slackening off rapidly, and hopes that in twenty-four hours may have opened out sufficiently to enable us to get into the land water. We are directly south of Cape Crowther. There

is evidently a strong westerly set of the current along the coast here. The tide sets from east to west. It will be an immense relief to get to land.

Started on bear's meat for breakfast to-day.

September 1st, Saturday.—At 1 A.M. Crowther stopped the engines, and sent word to say that the ship is surrounded by ice and can't go further east. I went up to the crow's nest and after a look round decided that we must go south or south-west if necessary to get round the ice.

Under steam all day, skirting the floes and taking any lanes of water or open spaces that offer themselves, leading in a northerly direction; sometimes all round the compass.

The captain reports to me that there is twenty days' steaming coal left (including all the coal on board and leaving nothing for Franz Josef Land), with eight tons in the hold, twenty-five tons in the bunkers, one ton on deck. The ship is burning five tons per day. I have had her slowed to three-quarter speed to reduce consumption, as I feel sure we shall burn far less coal in proportion to the reduction of speed.

Dead calm most of the day, but occasionally slight easterly airs. Passed through much young ice during the evening, and frequently we can hardly make headway through it.

September 2nd, Sunday.—Dr. Koettlitz read prayers at noon. Overcast, cloudy, and foggy in the early morning. Passed through much young ice.

At noon by the courses we find we are eleven miles south-west of our position yesterday. The ice-men are not at all happy in the present position, and say we shall neither get in nor out, and want to tie up to a floe and try to drift out. I ask them if they mean to throw it up

already. Under the circumstances I think it better that we should return to our position of the 31st, and trust to a northerly wind to carry the ice off the land, enabling us to get in, this apparently offering the only chance of reaching the land. The crew don't at all like the look of things, and say we are certain for a winter in the ice now.

We have recently pursued a most erratic course, and at this pace we shall remain here for weeks. I believe we have now got into the Spitzbergen ice.

About noon a moderate breeze from the north got up, which raised my hopes of it bringing the ice off the land. Stood to north and east at 1 P.M.; made clear water at 5.30 P.M., standing to east-north-east. At midnight high land on port bow was seen which later proved to be Cape Neale.

September 3rd, Monday.—At 2 P.M. kept to north-east. Stopped at 4.30 A.M. with Cape Grant forty miles distant to the north. The ice still packed towards the land. It looks impossible to get in from this point, and the only chance is to try further east, through a lead from the large water up which we have passed, and which we noticed leading eastward, with indications of further water that way. I decided to try in that direction.

10.30 A.M., half an hour after starting, one of the ship's company suggested that it will be better to try and get away south, as it is risky staying longer here. It seems almost impossible to get in to the land under these conditions. I go to the crow's-nest myself constantly, and do my best to keep the ship eastward, but somehow as soon as I am away off she goes again south or south-west. I gave the captain orders to go east in the hopes that the ship may go south-east instead of further westward, and told him to anchor to a floe in

preference to going the latter course. It seems a hopeless game.

Since 2 P.M. we have had all the hay off the main hatch and some of the Franz Josef Land stores out of the hold, to get at the coal that had been reserved for the homeward journey. We are filling up the bunkers with it, as there are only three days' coal left there.

The ship is now burning only three tons per day, as she has been reduced to half and three-quarter speed with twenty pounds pressure (the chief engineer has orders to run the engines at not more than from fifteen to twenty pounds pressure).

Nearly a dead calm after 11 A.M. Cloudy sky; no sun. Getting rapidly dark at night now. Strong current to south-west.

September 4th, Tuesday.—We have now been nearly a fortnight in sight of land, and yet cannot get there.

Navigating the ice and endeavouring to steer to the eastward. At 3.30. P.M. stood to north-east. Light north-east winds and overcast. Occasional snow storms.

Officer on watch, on discovering our intention to try to the north-east, was much concerned, saying that we can not get into the land and shall certainly be locked in the ice for the winter. I told him that we must try that way nevertheless, and have no intention of giving up till every chance is gone.

I have told the crew that "we shall not return until every possible chance of landing is gone, and remarked that the eyes of the whole world are upon us, that this is not a mere whaling cruise or a pleasure party but that we must do our utmost to fulfil what is expected of us and that I know they will act like men."

I keep an eye on the ship's course constantly, and let them know it.

September 6th, Thursday.—About 1 A.M. commenced steaming through a narrow lead blocked with bay ice (two to three inches thick) towards a polynia in the floes in the direction of Bell Island. Forged ahead very slowly, having frequently to butt the ice ahead two or three times before we could squeeze through. By 5 A.M. we had advanced about five miles nearer our destination, when we were compelled to “lay to” again to await a further opening.

At 9 A.M. the man on watch came to tell me that the wind is increasing from the west, and that the ice looks like shutting up: what is he to do? As we can only remain where we are I told him so. I think we shall be fairly safe.

I have had 580 lbs. of tinned meats brought up on deck for each boat and the biscuit got handy in case of anything going wrong, so as to be ready to place them on the floe.

Lay all day in a “polynia” with a freshening westerly wind, increasing to a strong gale, from south-west, with overcast sky and snow. The gale shows signs of opening out the ice, and several leads towards Bell Island are beginning to appear. About 9 P.M. “John” came down to say that the leads are widening and he thinks we can push on. I went to the masthead to have a look round. It was blowing a strong gale, with snow. I had the other iceman called and he gave it as his opinion that it would be better to wait for the gale to moderate before proceeding, and to allow a lead immediately ahead to open a little.

A lot of water is visible on the sky between Eira Harbour and Cape Flora. Sights could be obtained to-day.

I told the captain and the icemen to push the ship in as long as there is a drop of water to float her.

September 7th, Friday.—At 12.30 A.M. the officer on watch came down to say that a floe to windward is coming down upon us, and that we must shift out of the way of it. The wind is increasing with fitful gusts and it is snowing heavily. Got under way, and very slowly and laboriously pushed through the bay-ice surrounding us, and by repeated ramming and warping managed to force our way between the floe and some drift ice, and then tied up to the floe where we are protected. I waited for the snow to clear and the wind to moderate before pushing forward again. At 4 A.M., it showed signs of doing so.

At 7 A.M. the weather is clearing. The wind has shifted to west. At 8.45 A.M. we forced our way after much ramming and warping through the ice into open water and proceeded towards Bell Island. Thank goodness we are through at last! We have succeeded in spite of all our difficulties in reaching Franz Josef Land. We have overcome all obstacles, but it has been a tough fight.

At noon a gentle north-west breeze and fine clear weather. Bell Island lay, north 3 miles, west $1\frac{1}{4}$ miles, at noon. Eira Harbour is blocked with ice. No life is visible except a few "mollymokes," or Fulmar petrels.

We discovered an island about a mile long by half a mile broad, consisting chiefly of much-weathered basalt, off the east coast of Bruce Island. This I named Windward Island after our ship.

September 8th, Saturday.—At 10 A.M. we proceeded across the channel towards Northbrook Island to search for a landing-place. Found a suitable spot in a small bay on the west side. But as the ice in the channel was breaking up and filling up the bay, we were unable to utilise it. We ran down the channel to Cape Flora. Tied up to the land floe and went ashore. We walked

up to Eira Cottage, which we found with the roof off; water had got into everything, and every article was a mass of ice. I proposed three cheers for Mr. Leigh Smith and his party when we entered the hut, which was enthusiastically responded to. This is, or rather I should say was, a small hut, built of earth and stones and of what building materials could be saved from the wreck of the *Eira* fourteen years before. Here the

MR. LEIGH SMITH'S HUT

poor fellows had spent a long, dreary winter, almost dependent entirely for food upon what they could shoot. The greatest credit is due to those brave men, Mr. Leigh Smith, and his surgeon Dr. Neale, for the manner in which they brought all their men out of great dangers and difficulties and safe home again without losing a single life. Few know of the difficulties and dangers they had to face and overcome. The hut was photographed. I brought away a sandwich-box in a leather-

case (the former, strange to say, full of ice) to send back to Mr. Smith. We could not find Dr. Neale's letters, although we searched everywhere for them. We had to quarry out everything, as all articles are frozen as solid as the basaltic cliffs above.

September 9th, Sunday.—At 2 A.M. we started east along the land floe for Cape Barents to see if that is

CAPE BARENTS

more suitable as a spot for habitation than Cape Flora. At 5 A.M. we tied up to the floe about three miles to the westward of it. I shot here a large old he-bear on the floe. I do not quite like the look of Eira Harbour as a winter harbour; the ice is confined there, and is likely to prevent a ship getting out again in the summer. At 11.30 A.M. we steamed to Cape Barents.

The engineer reports that we scraped a rock half a

mile off the Cape, but, after having boats out sounding all the afternoon, failed to find it.

Landed to ascertain if the spot is suitable for our headquarters, but found that the sea at times washes over the neck of loose boulders running out from the cliffs, and also that the only spot possible to land upon is covered with boulders. I decided to return to Cape Flora.

The cliff of one hundred and fifty feet is of much-weathered columnar basalt, and sticks out bluff into the sea with a low boulder strewn neck, running out to a rise of about thirty-five feet towards the south-east.

We found a few pieces of pine driftwood, some comparatively recent ; also red snow on the base of the cliffs, which is produced by algae (a low form of vegetable life). I shot a walrus after returning to the ship, which sank in seven and a quarter fathoms, and although we could see it lying on the bottom, were unable to raise it. We tried with a harpoon fixed to weights and with grappling hooks, for two or three hours without success.

We made a depôt, on the raised point at the end of the neck, of 600 lbs. of beef and mutton in 10 lb. tins, and covered it with stones, marking the spot by means of an upright piece of driftwood covered with a sack, and a meat-tin on the top. On the side of the driftwood I wrote in pencil on a clean-cut surface :

“JACKSON-HARMSWORTH POLAR EXPEDITION.”

Sep. 9, 94.

Head Depôt at C. Flora.”

September 10th, Monday.—Arrived off Cape Flora and tied up to the land floe at 3 A.M. about three miles from the land. At 10 A.M. we let go, and steamed round the south-west corner of the floe to get in nearer to the land, as we found the ice too rough and broken

to carry goods over it. I decided to make this our home.

Sounded off the south-west corner of Cape Flora to land goods and form our headquarters here. The ship is in five fathoms one hundred and fifty yards from shore. At 1 P.M. we began discharging the deck load. At 8 o'clock we started on watches of sixteen hours' work, eight hours' rest, coffee every four hours, the land party doing equal time with the crew.

The ship frequently broke away from the ice owing to the high winds, and we had to re-moor her. I yet hope to get the ship away, but the winter is fast coming upon us.

From midnight to 8 A.M. gentle north-north-west wind with snow. My watch is from noon till 4 A.M. next day. Sixteen hours is a long day at this heavy work, but I am most anxious to get the ship away, and it is our only chance of doing it. Every one works with a will. It is the only thing to avoid having the ship frozen in for the winter.

September 11th, Tuesday.—Moderate north-east wind, and overcast throughout the day. Position as yesterday. Carrying on similar work. Armitage sprained his ankle while hauling a sledge over the boulders of the plateau to-day, and has to lay up. Seventeen degrees of frost most of the day.

Armitage shot a walrus, which, however, sank.

September 12th, Wednesday.—At 4 A.M. all the deck load was discharged. Carried up the stores from the hold. Light north-west wind, veering to west towards midnight. Overcast most of the day, with eight hours' snow. From 8 P.M. bay ice has formed rapidly owing to the temperature falling (18° of frost), the ice making it difficult to get the boats to and from the shore.

CAPE FLORA

Some of my party are nearly played out from the very hard work we are doing and the long hours, and I have had to rest them. Every one has put forth his utmost efforts, knowing how much depends upon it.

Armitage's walrus came to the surface and was secured. It is a start for our larder, but a trifle unsavoury one as the carcase is blown out with gas and smells very gamey, but fresh meat is not to be despised.

September 13th, Thursday.—Wind shifted to south-west and south-east; light breeze. The bay ice is thick round the ship and in the small bay where we are landing stores. We had to knock off work from 4 A.M. till 10 A.M., as the boats could not be forced through the ice. At 10 A.M. a south-east breeze opened the ice, which closed in again at noon, again stopping us. I am afraid the ship will not get away this year, in spite of all our efforts. I am, however, fairly satisfied with her position for wintering, being protected by grounded bergs at the points of pressure, and she is also in a good position for getting away next year. I don't, however, relish the prospect of having the whole ship's company on my hands for the next nine months in addition to my own party, for all the responsibility of the matter will fall upon me.

Began walrus meat to-day—not a delicacy by any means. The collapsible barge for the ponies is so stiff that we cannot open it. The roofs of the canvas huts are also so stiff from frost that they will not meet at the joints. The crew have asked to be allowed eight-hour watches and four hours' sleep, instead of sixteen hours work and eight hours' sleep; the land party continue as before. It is tough work, however, at this heavy work, and in this weather. The canvas huts are made of a light

framework of wood and canvas, having the great advantage of being very light, and can be packed into a small space. I've brought four of them, which I find very useful as store-houses, but quite useless for living purposes on the 80° of north latitude, being too cold and the snow drives into them.

September 14th, Friday.—Overcast generally, with variable, light easterly and westerly winds. Armitage by observation makes the latitude 79° 57' N.

The boats cannot be forced through the young ice, which is also too weak to bear walking upon; consequently we are unable to work to-day, as we cannot reach the shore. We are, however, glad of a rest, enforced though it be.

Snow fell for three hours, and the wind got up towards night increasing in force.

September 15th, Saturday.—The gale has cleared out the bay ice on the seaward side of us, which returned at 1 A.M. on the 16th, with the change of wind to south-west. The wind arose with extraordinary rapidity, and fell as quickly. At 11.30 P.M. it was blowing a gale from east by south, and half an hour later was calm, with occasional light air from south-west.

We knocked off work at 4 P.M. owing to the bitterly cold wind and snow. When trying to return to the ship by walking over the thin floe, as the boat was so slow in trying to force its way through the gluey bay ice, it broke with me, and I fell through up to my waist; it was rather cool. I got out, however, without much trouble, owing to Mr. Child's smartness and promptitude in pushing a piece of wood towards me. Earlier in the day one of the Ostiak dogs fell through some thin ice, and I had to go to its rescue by shoving in front of me a piece of wood to lay hold of in case the

ice broke with me. After some trouble I managed to pull it out. These dogs show remarkable ignorance of the difference between safe and unsafe ice which one would hardly expect.

A case of Cambridge sausages is discovered to have gone bad in the hold (twelve 2 lb. tins). The tins are so bulged as to burst the case. On being opened the contents smelt horribly. This is pleasant! I hope the other food is keeping well.

September 16th, Sunday.—The crew refused to work to-day for the officer on watch as it was Sunday. I went forward and spoke to them, and they turned to and gave no further trouble. We cannot afford to take holidays yet. Continued getting the timber for the log house up the steep slope on to the plateau. Fine clear weather, light south-west wind till 3 P.M., and then shifted north, the sky becoming overcast with snow, and blew stiffly towards midnight. We find that the ice to-day is stronger, and we now do not attempt to force a boat through it to the shore, as it is out of the question.

All the dogs were allowed on shore to-day. They took advantage of their liberty to single out one unfortunate animal and tore him badly. I had him carried on board, and the doctor sewed him up and attended to him generally, but he died later on in the evening.

Started lime-juice, one ounce per day per man for the crew. I am very doubtful of its efficacy as a preventive of scurvy, and do not take it myself, neither do I insist upon the members of the land party using it; but as the ship's company are under the Board of Trade, I see that they do. For should scurvy break out amongst them, "did they take lime juice?" will be a question I shall be asked, and I shall be blamed if it be neglected to be

taken. I believe that wholesome food, especially fresh blood meat, is the best preventive of this scourge of the Arctic; and this I hope to obtain, although game at present appears scarce.

September 17th, Monday.—At 4 A.M. moderate north-west gale, gradually decreasing to a light breeze throughout the day. Barometer and thermometer rising. At work at 6 A.M. and continued till 6 P.M. Got all the timber for the log house on to the plateau, and commenced building. We hoisted the Union Jack on a flagstaff at the point of the plateau, all hands being present to see the ceremony, and gave three resounding cheers as our flag fluttered upwards.

About 7 P.M. the doctor and I went for a walk round the point of Cape Flora over the East Glacier. Saw the tracks of a bear and a fox.

From the point of Cape Flora I could see Bates' Channel and Miers Channel full of young ice, but with a clear channel between Windward Island and Bruce Island.

There seems to be next to no game here this year; all we have seen here yet in the way of life being a few walruses, kittiwake gulls, and a few mollymokes or fulmar petrels. This is due perhaps to there having been little land water till about the 7th of September, or else the birds had already departed for the south on that date. The looms, probably, had gone, but we did not see any on our way up.

I am getting very anxious about fresh meat for the winter, as there are between thirty and forty people to feed, but I hope that bears may soon put in an appearance.

September 18th, Tuesday.—Light north-west wind. Fair generally, but with light snow occasionally. At

noon with the thermometer at 23.8° F. and wind north-north-west, barometer at 30 inches, a very fine rain fell for an hour (probably indicating a shallow stratum of cold air near the earth, but with a warmer stratum above). This is remarkable. Went on with the log and canvas huts and carrying the provisions up the ice slope to the site of the huts.

The ice is increasing slowly in thickness. A walrus and calf were seen on a piece of ice to seaward, but were unapproachable.

The doctor and I went for a walk eastwards after 6 P.M. as far as the edge of the glacier where it enters the sea in the bay to the east of Cape Flora. Here we found a quantity of driftwood, some of it looked like willow, but none is recent. No remains of the *Eira* to be seen.

The stars and moon shine brilliantly to-night. We have not seen a single loom or rotche since we reached Franz Josef Land.

CHAPTER III

WINTER DARKNESS—DREARY DAYS

September 19th, Wednesday.—We continued the log-hut we had brought from Archangel in pieces. Each log being numbered to enable us to splice it together with accuracy. I had the hut put up in Archangel to enable me to see that nothing was missing. Continued carrying the stores up the steep slope to the site of the hut.

I sent Fisher and another man out botanising, but on returning he reported that the vegetation is dead, and valueless for purposes of collecting.

In the afternoon the doctor and I started off to look for a practicable road north. We crossed the glacier round the cliffs to the eastwards. Found that Northbrook Island was recently, at least, two islands, as only a low gully connects Cape Flora with the rest of the island.

We ascended the icy slopes of the rocks to the north of Cape Flora. I found the height by aneroid to be 1300 feet above sea level. We tried to descend by the south-east side but the ice slope being much fissured and very precipitous we retraced our steps. Found some shells, mostly bivalves, and an old whale-bone, apparently belonging to the *balæna mysticetus* on an old sea beach near the point of Cape Flora, ten or twelve feet above the present sea level.

As we approached the ship we saw that a bear hunt

OFFICERS OF S.Y. "WINDWARD," 1894 TO 1895

was in progress, for a bear led on by the dogs had come up to the ship in its desire to stalk them and so ended his days, and was added to our larder. He had a quantity of straw in his stomach, which had been thrown overboard, no doubt, from packing-cases, I am very glad to get this meat.

At 8 A.M. barometer falling, wind shifting about to east and east-north-east, finally settling to north at 4 P.M. and gradually increased to storm force at 2 to 3 A.M., on the 20th. Occasionally lulling to almost calm and then bursting forth again in most furious gusts. Heavy snow falling from midnight to 9 A.M. on the 20th.

The ice anchors broke away and the ship got adrift about 2 A.M., and on two other occasions gave us much trouble. We had to get up steam to make fast again. The situation caused considerable anxiety. I feared that the gale would clear all the ice out of the small bay carrying us with it. The grounded berg, however, held fast. I shall be glad when the ice around us is sufficiently strong to resist all weathers and make the ship fairly safe.

September 20th, Thursday.—The gale from the north lulled about 4 A.M. We found that one of the canvas huts which had not been completed, yesterday, was blown over the cliff on to the edge of the ice and smashed to matchwood, and many articles had been carried some distance away. Later on in the day part of the causeway, which we had laid over the boulders to drag the goods over, was torn up and blown some distance. We started work after breakfast, but the high bitter wind and driving snow was so trying that I sent all hands on board again, and only kept two men to help me to nail down the canvas, and straighten things up to prevent further destruction.

Wind veered to west, and about 10 A.M. shifted to

north-west and north, and increased again to a whole gale at noon. This is a windy spot!

At 8 P.M. the wind shifted to N.N.E. with similar force, and continued so with fierce gusts of storm force until midnight. We have now five lines out to the two grounded bergs (four steel hawsers and one manilla rope). I hardly think that these will carry away.

Weather overcast throughout, with snow for six hours, and thick snow for four.

September 21st, Friday.—A whole gale from north-east is blowing, moderating and veering to north at noon, which continued till 8 P.M. and then decreased to a fresh breeze. All hands engaged on shore putting up the canvas huts, building the log-house and dragging the stores up the ice slope.

Weather overcast and cloudy generally. Repaired the causeway which had been blown away, and got up two of the canvas huts. We found the canvas frozen, very hard and unpliable, and the wood warped, rendering it difficult to put them up.

September 23rd, Sunday.—I gave all hands a spell from work to-day as I make it a rule to take a holiday from work on Sunday, unless there is some special reason for doing otherwise. Four of us walked over the floe to Cape Gertrude four miles to the eastward and explored that spot, which has a most barren appearance, and little vegetation is apparent. There is, however, too much snow on the ground to make a close examination possible. We crossed the foot of the glacier to the east, round the point of the basalt cliff east of Cape Flora. Saw many tracks of bears and foxes, but no life except a few snow buntings up on the rocks, one of which I shot as a specimen.

The wind from the north-east was bitterly cold and

very strong. I got my nose, both ears, and chin frost-bitten, and the doctor a finger. When returning we struck up the gully, through which the sea very recently has run into Gunter Bay, where we found some bivalve and other shells, high above the present level of the sea (six or eight feet above the present sea level). A raised beach about fifty feet above the present sea level is noticeable both on the edge of the gully (east side) continuing round the point of the high cliffs and corresponding in height to the slope on Cape Flora up which we have been dragging our stores.

Wind north-east, fresh to strong to 5 P.M., when it shifted to light airs from east, continuing so till midnight. Fine, clear weather, with almost cloudless sky. Barometer 30.42, and still rising.

A flock of eight looms were seen to-day on the edge of the floe. The first we have seen since reaching Franz Josef Land.

A faint aurora visible to-night like cirrus clouds in streamers, from zenith to 30° above horizon from north-east to south-west.

One ounce per man of lime juice served out to all the crew to-day. The doctor undertakes to see that an ounce of lime juice is served out to each man daily, and that each drinks it. I am indifferent as to whether the land party take it or not. One or two are doing so as a refreshing drink.

September 24th, Monday.—We landed the ponies and stabled them in the hut—which is now nearly completed so far as the walls are concerned—while their stable is being built. We went on landing stores and dragging them up the steep slope to the site of the hut.

At midnight we observed the aurora during its

fifteen minutes' duration. Bearing W.S.W. to S.S.E. Pale green in tint, arch in zenith and W.S.W., shaped like letter S in S.S.E. It folded up like a scroll of paper and disappeared towards the eastward. Armitage is taking notes of the aurora.

Of the aurora little is known—of the causes producing it none can speak. Those weird forms of light which silently move in ghost-like procession through the dim Polar night, and which the Esquimaux believe to be the souls of their dead at play, have little to indicate their origin or whence they come or whither they go.

The colour is usually a pale straw and often limited to a single isolated patch. Sometimes of a pale green, and there may be several streamers at different points of the sky. Again the whole sky may be a blaze of light with pale green streamers fringed with a beautiful rose colour, and in rapid motion uniting at the zenith to form a corona. Suddenly those lights will die out and disappear into space, and then after an interval will reappear again and so go on. Little light is given, as a rule, by the aurora, and only on a few occasions have I known sufficient to cast a shadow. The magnetic needle is always agitated during a brilliant display.

September 25th, Tuesday.—Light airs and winds from S.E. and E.S.E. Five hours snow. Overcast, but clearing towards night. Mist during the day, obscuring the land. The snow to-day, which fell heavily for an hour, was like fluffy down. It was very clear and crystalline.

We rigged an "endless fall" and "shear-legs" from the ship to the shore, dragging the sledges to the top of the cliff by the steam winch, which enabled us to proceed very much more rapidly, although I much begrudge the coal which this necessitates burning; but time is valuable.

HAULING STORES UP THE ICE-SLOPE

We continued getting up the stores and proceeded with building the log stable.

The aurora visible from 11.40 P.M. to 11.50 P.M. Clear overhead, alt. 60° . Pale green in colour with pale bands, bearing S.S.E., and moving from south to north. Lowest temperature to-day $4^{\circ}.2$ F.

There is bay ice as far as the eye can reach with two or three spaces of open water here and there. The ship has quite a spectre-like appearance with the rigging white with hoar-frost and snow, several inches in thickness.

September 28th, Friday.—Light south winds until 10 P.M. Light to moderate south-east winds to midnight. Overcast throughout the day. One hour's snow. Misty over the land.

We landed and stacked coal on the north-western side of the hut to-day, forming a rampart of bags of coal. The stack is a protection to the hut from westerly gales. We landed and stacked in bags six tons of coal.

September 29th, Saturday.—We landed and continued sledging up the coal and stacking it near the hut as yesterday. Stacked eight tons.

Light east winds and overcast throughout. One hour's snow. Lanes of water opened up to south and west of ship in the morning closing towards night again.

Bailey called me at 5.30 A.M. (in accordance with orders I had given to call me either night or day in event of any game putting in appearance) saying that a bear could be seen. I turned out, but found he was away to the south on the young floes about three miles off, and too far away to get him. I had a fire lighted on the floe, and bones and fat burned, to make a smell to try and

attract him, but as the wind did not blow directly in his direction he did not appear to notice it, and eventually disappeared in the direction of Bell Island.

Child succeeded in repairing the musical box, much to the joy of all. We set it going again and had a concert in the evening, each man doing his best as a vocalist, and all joining vociferously in the choruses ; we are always a very merry party.

September 30th, Sunday.—The doctor read prayers as usual. Light easterly airs and calms and overcast generally, very thick mist all day. The thermometer at zero at 4 A.M. A very thick frost-rime of four inches deep formed during the day on the weather side of the spars and rigging, giving the ship a still more arctic appearance than usual.

Spent most of the day in instructing and practising with my party in ski-running down the slope under the rocks. Some progressed fairly well, but others found that lying on the flat of their backs when at the top of the slope the only secure position, and caused great amusement. We all thoroughly enjoyed it. We had our usual concert in the evening, with often the musical box as an accompaniment—"Rule Britannia," "John Peel," "Drink, Puppy Drink," and other sporting songs being the favourites. Armitage is very good in being always ready to sing when asked. He has fortunately brought a number of songs with him.

Dunsford keeps us amused by relating his experiences when serving with the French during the Franco-Prussian war and with the British in the Soudan. The skipper also tells us of his adventures when fighting for the North in the American civil war.

It is a very fortunate thing for us that we have the log as well as the canvas huts—the latter would not be

at all satisfactory as living houses in these latitudes, but come in well for stores.

October 1st, Monday.—In the afternoon we opened some of the cases of furs and put them in the huts. While so engaged a bear was seen on the ice in the direction of Bell Island. Armitage and I started off with our rifles to shoot it, accompanied by two dogs. The bear on seeing the dogs made towards them, who, not liking the look of him, retreated behind us. We lay down behind a hummock and he came up within fifty yards of us, when I fired. The bear gave a jump in the air on getting my bullet in the chest, but wheeled round and set off at a great pace, receiving four more bullets from me in the hind quarters as he went, at from a hundred and fifty to three hundred yards distant.

Then all my cartridges gave out, and Armitage having expended all his, he returned to the ship about a mile off to get more, I followed the bear, which had made for the land, to keep him in view. He was bleeding profusely. Six or eight dogs then caught sight of him, and much to my annoyance kept him moving on. After about half an hour, Armitage, accompanied by two others, returned, and I resumed the chase, following the bear for three miles across some thin bay ice, getting in another shot behind, but still without stopping him. Eventually we came to a channel kept open by the tide and current from Meirs Channel, and having only small pieces of loose ice and snow packed up in it, and in trying to follow the bear I got in and had to return to firmer ice. I clambered on to a berg, and with Armitage, who had then come up, got a shot each into him as he moved along about two hundred yards off on the other side of the channel. He then lay down and apparently died at once. We searched all round, but

could find no means of reaching him, and were forced to leave him until to-morrow, when we can bring with us sledges to enable us to get over the unsound ice. I used my sporting .303 rifle.

October 2nd, Tuesday.—Started off with "John" and Dalziel of the crew, and the doctor and Fisher of the land party, with three sledges, to try to recover the bear shot yesterday evening. On arriving at the spot we found that the ice had opened, and that all traces of him had been carried away by the current, where he had been lying being now open water.

We got back to the ship after an eight-mile tramp over the floes, about 2 P.M. A bitterly cold, strong north-east wind was blowing in our faces when returning. The wind then got round to E.N.E., with snow. Misty and overcast all day.

We worked under difficulties owing to the vile weather during the afternoon, dragging the remainder of the hay up, and stowing articles in the huts.

October 3rd, Wednesday.—Blowing from E.N.E. and N.E., in strength varying from a strong breeze to a moderate gale. Overcast with heavy falling snow up till noon, and then driving snow, forming deep drifts, till 11 P.M., when the wind lulled. Thermometer rose to 18.8° F.

It being difficult to continue any out-of-door work, Armitage, the captain, and I went up to the log hut, and directed and helped the Russian and the ship's carpenter in dividing the interior. All the other hands and the rest of the land party remained on board and stayed below, except the doctor and Fisher, who went out on the ice for a few minutes after dusk, and came back and reported a bear near the bows. I took my rifle and searched, but could neither find it or any tracks. It

doubtless belonged to the new species of bear which has recently become very common, and which I have named *Ursus Koettlitzii* et *Fisherii*, in other words yellowish hummocks of ice.

October 4th, Thursday.—Moderate gale and overcast, hazy weather, with fierce gusts of wind. Force of wind from 9 to 10, with driving snow. Direction of wind north-east.

The wind blows the ice away to the southward off the land floe, which is held by the bergs, and the ice is seldom sound more than a mile from the shore, past that point the strong currents and high gales keep it in a broken-up condition and in constant motion. At 1 P.M. a bear was seen on the berg near our landing-place. I went after him, approaching within ten yards of him, and planted a bullet in his neck, it going right through, but without stopping him. He then made for the bergs at the edge of the floe, and Armitage put two bullets into him as he passed. The dogs had followed him snapping at his heels, which delayed him, as every now and again he would turn and make fierce short rushes at them, and then on he would go again. He stood at bay for a minute or so before receiving Armitage's second bullet, then took to the water, roaring savagely, and escaped. I followed the edge of the floe for a mile or so, expecting him to return to it, as he was badly wounded in three places, and it must be some miles to the nearest ice to the south (the direction he took); but he did not do so.

Moving stores into the huts from the ship.

October 5th, Friday.—At 4.20 P.M. sighted a bear on the floe to east of the ship. Two of my men and I stalked him and almost surrounded him. I shot him behind the left shoulder, and brought him down.

Armitage was using a Government .303 rifle, which froze at the striker owing to its being oiled, and would not go off (temperature 3° F.). We took him on board and skinned him, adding the meat to our larder. He was a he-bear about three-quarters grown.

Remarkable sunset this evening of dusky red, with a long column of light in contact with it and about 15° above the sun. About 20° to the south a similar one appeared parallel to the first one. This was no doubt caused by refraction, and bears considerable resemblance to a sunset I once saw on the Petchora River in North-East Russia in the winter of 1893.

October 6th, Saturday.—Continued carrying provisions into the huts. Strong north-east wind, increasing to moderate gale at 8 p.m., and fresh gale at midnight. Fierce gusts throughout, force 8 to 10.

Clear weather and no snow falling, but snow drifting before the wind.

Continued stowing away provisions in the huts, and cutting ice from the fresh-water pond near the log hut for use during the winter.

We began using the leather Lapp laipeshko, discarding the Russian high boots, which are now too cold for wear. I gave the crew one of our footballs to amuse themselves with on the ice, and just now football is all the rage when work is finished for the day.

October 7th, Sunday.—Still blowing hard and cold, with a temperature of 5° F. to 7° F. About 10.30 A.M. Heyward came rushing into the cabin in great excitement to say that the carpenter Sharpe, and Allan the engineer, while walking near Leigh Smith's hut had fallen in with a bear (Allan being some distance from the carpenter at the time). The carpenter, while sheltering from the cold wind and waiting for Allan to return,

suddenly espied the bear a few yards away. He at once sprang upon a large boulder near which he was sheltering to get a position of vantage, the bear followed and planted his fore paws upon it preparatory to clambering up after the carpenter. He drew a revolver which snapped about five feet from the bear's face in a way that some revolvers have on occasion. The dogs,

“AND PLANTED A BULLET BEHIND THE LEFT EAR WHICH BOWLED
HIM OVER ”

which had now come upon the scene, at the same moment drew away the bear's attention, enabling the carpenter to spring from the boulder and run for the ship, which he reached in a breathless condition, doing record time I believe. I hurriedly snatched up my rifle and started off, as the carpenter felt anxious about Allan, who was still in the neighbourhood of the bear. He, however, had seen him at a distance, and had kept out of harm's way by climbing up the talus. On going out upon the floe

I met "Mr. Bear" about three hundred yards to the eastward, near the floe-berg, marching towards the ship. With the help of the dogs I managed to approach within five yards of him, and planted a bullet behind the left ear which bowled him over. All hands turned out to sledge him in. He was a very large he-bear. I named the rock, where the carpenter had his little adventure, Sharpe's Rock, after him. Dimensions of bear :

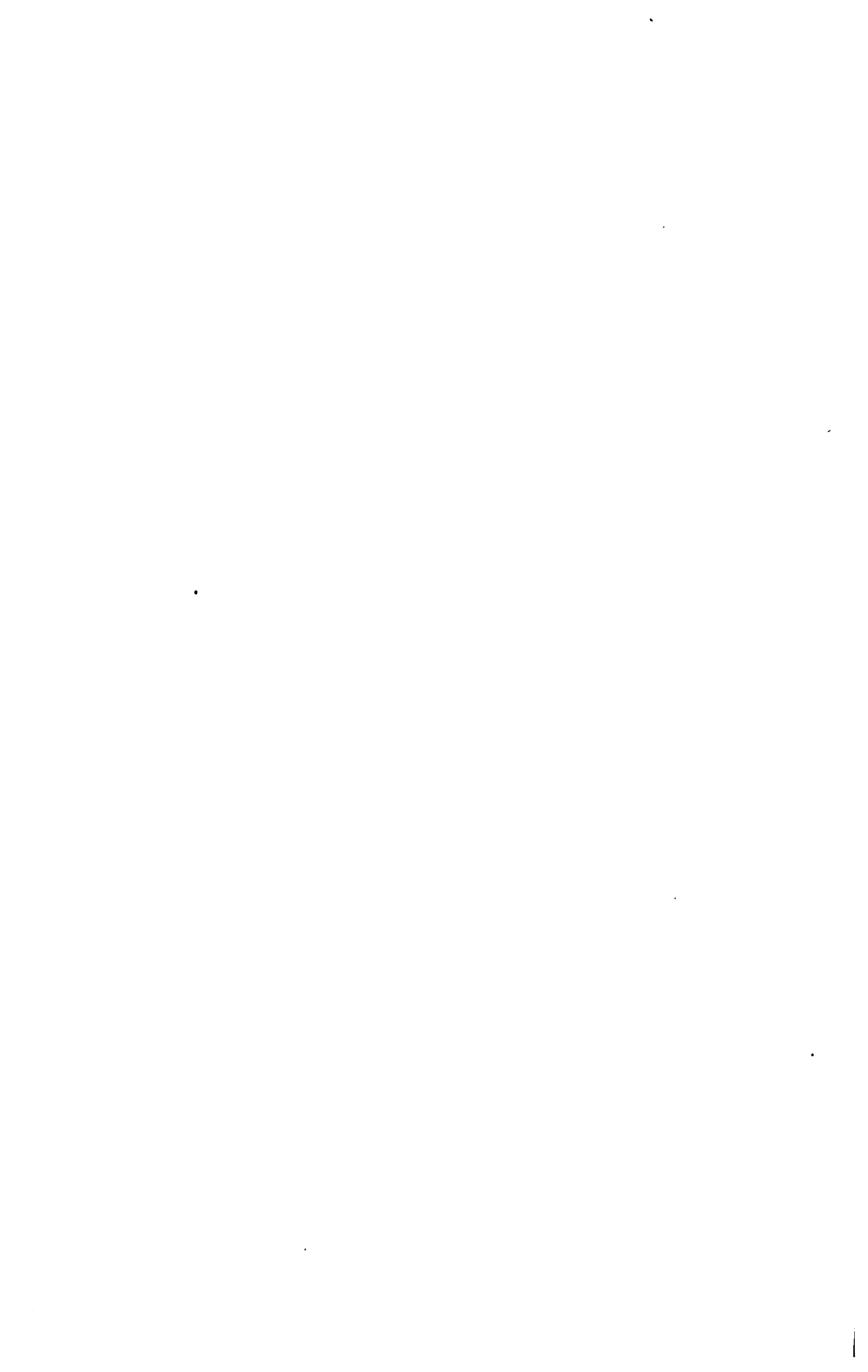
Along belly from the tip of the nose to tail	8 ft. 1 in.
Along back	7 ft 9 ins.
Girth round the ribs (lower)	7 ft.

I photographed him on the sledge, when we had dragged him to the ship, with the carpenter. We had the heart and tongue for dinner, which are very good indeed. I have given orders that no one is to go far from the ship without a rifle.

Fresh N.N.E. gale, decreasing to moderate gale at 4 P.M., and increasing to strong gale at midnight. Fierce gusts of wind, but much steadier to-day. Sky clear, and no snow falling. We all went for a walk in the afternoon towards the glacier to the east of us. We found in a snowed-up gully coming from the rocks a deep hole dug out of the snow by a bear, being a rounded cavity three or four feet deep, which suggests that it intended lying up there. There is every probability, however, that it was dug by the bear which I shot this morning. The Government .303 rifle which the doctor brought out, again froze (temperature 16° F.). This is due to oil not having been carefully removed from the striker.

I have been hoping to make a start depôt-making for some time past, but with these perpetual gales it is impossible. I am also very busy with other things.

October 9th, Tuesday.—Fresh south-east wind increasing to a moderate gale from east-south-east with



hard gusts, force 9. Thick driving snow till 8 P.M., when the wind moderated and shifted to north-east. In the morning we stowed a number of cases of spirit on the top of the biscuit-cask wall to increase the height of it and so protect the hut. The weather was too bad to continue work outside in the afternoon. I went ashore to superintend the building of the Russian stove, which Maxim, the Russian, does not understand. The weather to-day is vile. A Finn, named Blomkvist, of the crew, knows something of these stoves, which are about 7 feet high by three feet in diameter, with an aperture for wood to be burnt in at the base, and flues above connected with large, oven-like spaces. Ours, however, fails to work very well and occupies too much space.

The plateau below the rocks of Cape Flora is swept quite clear of snow by the wind. The only portions of Franz Josef Land clear of glacier that I have yet seen are those protected from the ice sheet by rocks behind and swept clean of snow by wind. At such spots it is possible to find a suitable site for a hut, elsewhere the land is covered by glacier, with the exception of low islands, such as Bell Island.

October 10th, Wednesday.—At midnight we observed the aurora to north-west and west arched, with a long streamer to north-east, of a pale, yellowish-green tint. It was like rays thrown by the sun from underneath clouds.

October 11th, Thursday.—Calm and light easterly airs till 6 P.M., and then light W.S.W. wind, and again calm and gentle E.N.E. wind at midnight. With the exception of mist surrounding the base of the hills, which cleared about 7 P.M., there was fine clear weather throughout. Temperature most of the day 10° F. Fitted up the observatory we had brought with us in

sections, but found it very flimsy and quite unsuited for this climate. Took it down again and stowed it near the stable. My fellows to-day hoaxed the skipper by sticking a wax hand, which was found in the sleeve of my sealskin coat (a reminiscence of a Grafton Gallery party), in a snowdrift at the foot of the cliffs. He imagined it to be part of a real body buried in the drift, in which they all encouraged him and fooled him to the extent of his bent. He rapidly came to the conclusion that it was the body of one of Mr. Leigh Smith's men, of whose death he guessed nothing had been said, and even surmised foul play.

He chided Armitage and others for light conduct when their suppressed laughter bubbled to the surface, and discussed the solemn way in which the supposed body should be buried. He intended taking Crowther with him while the disinterment was going on and to watch him—*à la* Hamlet watching the King—for he imagined that the Leigh Smith party had committed a murder while wintering here, and that poor Crowther knew all about it. The skipper accounted for the difficulty we had in pushing through the ice to Franz Josef Land by his reluctance to visit the spot of the murderous deed. He also proposed to clap him into irons during the winter, and he himself to return with his prisoner to see that justice was done. He then proceeded with great care to dig the corpse out of the drift, when the wax hand suddenly tumbled over. Tableau!

Late in the afternoon we got out the football and amused ourselves by kicking it about on the floe. The Russian stove is finished, but it does not work satisfactorily, having too great a draught, and half the heat is wasted.

An aurora at midnight—pale green tint. Standing

E.N.E. to W.S.W., with a huge arch varying in altitude from 10° E.N.E. to 50° at the centre and 20° at W.S.W. extreme.

October 12th, Friday.—North gale increasing to strong gale at noon, shifting to N.N.E. at 8 P.M., and decreasing to fresh gale. Fierce gusts throughout of force 10. Clear sky, with driving hard snow from off the land. Temperature greater part of the day 13° F.

Started caulking the log hut with oakum. Maxim, the Russian carpenter, and I took the shoes off the four ponies, as they will be far better without them.

I got my nose frozen twice while crossing from the ship to the house, a distance of four hundred yards. One of my men also had his cheek frozen.* While going to the house in the afternoon the force of the wind was very great. It was blowing so hard as to render it difficult to stand against it. I kept all the others on board the ship in the afternoon, as the force of the wind and the low temperature and driving hard snow rendered it too unpleasant to work in.

One of my reindeer sledges got adrift and was carried on to the floe from near the hut by the high wind and smashed to matchwood.

October 13th, Saturday.—A strong north-east gale blowing, increasing to a whole gale at 4 P.M., and decreasing to moderate gale at midnight, with fierce

* A frost bite comes on almost imperceptibly. The face has become very cold from the bitter wind, a white spot appears on the nose or cheek but without any marked change of sensation, and one is usually informed of its presence by a friend. This increases in size, is hard and without sensation. The best means to remedy this is to place a warm hand over it and very gently rub until it disappears. To rub the spot with snow is a mistake, for the skin being in a tender condition, it is easily removed, and a raw place is the result.

Frost bites taken in time are not dangerous, and the only result of most is perhaps a peeling of the skin and a raw place for some days.

gusts of force 9, 10, and 11. Tried to bring up the steep slope a number of articles that had been blown over, but the wind was too strong to enable me to do so. Stowed them away on the lee side of some hummocks upon the floe until there is less wind.

The ice outside of our land floe to the south and south-west is again driven away, and the frost smoke is rising in clouds from the open water. About four hundred yards outside of the ship the ice parts after a gale. It is the grounded bergs that have always held the ice inside of them. There is very little daylight now, and we have to keep the lamp burning all day in the cabin. Since the sun set after the perpetual daylight of the summer the daylight has diminished rapidly, and night has increased in length as days went on. Now only three or four hours of sunlight are given to us about noon, and soon we shall lose the sun altogether, and the grip of the dark polar night will soon be upon us, not to be released for four long, dark, dreary months.

October 14th, Sunday.—Fresh north-east wind, moderating to calm at 8 A.M. At noon light north airs. At 4 P.M. calm. At 8 P.M. light N.N.E. winds and airs at midnight. Overcast and cloudy during the day, clearing at 6 P.M.

The Rev. Dr. Koettlitz—as we call our doctor—read prayers as usual at 11 A.M. We all played football on the floe for an hour or so afterwards. I exercised the light brown mare pony in the sledge, but found her to be a gibber apparently and without any life or go in her. After lunch we played football again for an hour and a half (four a side), and I exercised the black pony, found him to be a delightful roarer (or else the cold he has may account for it). It doesn't look a promising stud!

AN ADDITION TO OUR LADDER

About 5 P.M., after dark, while passing the base of the cliffs I discovered by the aid of the dogs a she-bear in a hole in a snow-drift, where she had evidently intended to lay up, the fierce gales of the last few days having doubtless hurried this on. I ran on board for my rifle, and the skipper and two of my men followed me with rifles. I killed her with one shot, with a soft-nosed bullet from my .303 rifle, placed just under and a little behind the left ear. We put a pony in a sledge and dragged her into the log-hut for the night to prevent her freezing. When we gave the dead bear a start down the steep icy bank of the talus, she glissaded down at a great pace, nearly overwhelming the skipper, who was standing in the line of the slide, causing much amusement to people around and ire from him, poor chap! The bear's lair was about four inches below the surface at the dome, and quite shut out from the open air, with the exception of a small breathing hole, towards which the bear kept her hind quarters. She had filled up all the entrance behind her but this small hole. The dogs smelling and yelping at it aroused her, and made her burst through the hard snow above her head.

I shall start to the north-east to-morrow to make a provision depôt if the weather will only permit.

At 8 P.M. observed aurora, pale green. West to east. From 10° above west horizon across zenith and 50° above east horizon, in arch with several streamers from it, with another small arch at the western extreme of the large one.

"Crowther tells me that during this time of the year, when they wintered here in 1881 to 1882, they had chiefly south and south-west winds, which were much warmer than the north and north-east winds we are getting now.

"Carlo," the large retriever I brought from England, killed an Ostiak dog to-day. I shall tie the dead dog round his neck for a few days to try if that will break him of fighting. Lickings have no effect on him. He has always been very pugnacious, and has never lost an opportunity of indulging in pitch battles with any dog that will accept a challenge from him, always to the detriment of the other dog who accepts it. He swaggers about among the sledge dogs with all the supposed airs of the Britisher abroad, with quite the attributed Irish querry in his attitude of "Will any one trid on the tail of me coat?"

October 15th, Monday.—Light breeze at 4 A.M. Moderate breeze at 8 A.M. Moderate gale at 10 A.M. Fresh gale at noon. Temperature 12° F. Blowing hard again and very cold. No chance of starting north-east while this weather lasts. At 4 P.M. a whole gale is blowing. Gradually decreased to light north-west and north winds at midnight.

None of the Expedition left the ship to-day. I went to the hut to attend to the caulking of it, &c., and did a few odd jobs; building even such a little place takes time in such weather.

At 8 P.M. observed aurora. A narrow band across zenith east to west. Altitude 70° at each extreme. Three streamers arising from north-west horizon to an altitude of 15° . Pale green in colour.

October 16th, Tuesday.—Still blowing, with a temperature of 12° F. Another man and I took the pony and sledge to Leigh Smith's hut to fetch a cask lying on the beach. We had there considerable trouble with the pony, as it would not face the bitterly cold and strong wind when returning. The sledge was blown over several times, and on one occasion the pony nearly

followed it. Broke a shaft and had general trouble. Got my ears a good deal frozen owing to my cap being a little slack. Finished the Russian stove, using clay and brick. It now appears to work better and to give out sufficient heat, and is a great improvement on the first one built.

At 3.30 P.M. the doctor and I went off for a walk towards the point of Cape Flora. It was still blowing hard and snow driving, and the thermometer at 2° F.; but I must get exercise somehow.

I climbed the talus up to the rocks near the summit of Cape Flora, taking my best bear-dog to discover any lying-up bear there. I want more meat for our larder and dogs.

I measured the thickness of the young floe to-day and find it to be $12\frac{1}{2}$ inches: this is excluding the little snow there is on the surface of the ice.

At 2 A.M. moderate north wind. At 4 A.M. strong north-east wind, increasing to fresh gale at noon and gradually decreasing and veering at 8 P.M. to moderate north wind. At midnight, moderate N.N.E. wind. Fine but overcast weather.

October 18th, Thursday.—At 4 A.M. light north wind. At 8 A.M. light north-east wind, increasing to fresh wind at 8 P.M., and decreasing to light wind at midnight. Fine clear weather throughout.

Cirrus, and cirro-cumulus clouds of solid appearance, like thick drifts of snow, with very rounded backs, dark coloured and tinged with red and pink, were visible from 10 A.M. till 6 P.M. in north-west and west position of the sky at an altitude of 40° . While the sun was visible very long regular lines of cirro-stratus clouds settled parallel and over one another for 15° above the sun. Sky of a light-coloured, very clear blue. There were about a dozen

cirro cumulus clouds which did not move during the times mentioned.

Went for a walk in the afternoon, Armitage, the doctor, and Fisher accompanying me along the margin of the open water about three quarters of a mile from the ship towards Miers Channel and the west point of Cape Flora, in the hope of meeting with a bear, taking the dogs with us. We found it quite calm at that point, while a moderate to fresh wind was blowing at the ship, both when we started at 3 P.M. and when we returned at 5 P.M. The winds here certainly appear to be somewhat local and blow from the high land, as they do at Trieste. Occupied all the morning in collecting fragments of the observatory and other *débris*, which the gale had blown over the cliffs on to the floe, and in carrying them up to the hut.

An aurora, from 8 P.M. till midnight, north-west to east, pale green, moving towards the south-east in arches and streamers, appearing and disappearing like the rolling up of scrolls of paper.

October 20th, Saturday.—Light to strong north-east winds and fine but cloudy weather generally. Misty at times and three hours' snow. At 3 A.M. temperature 12° F. We put up a dog-kennel out of the broken pieces of the canvas hut. The carpenter reports that he cannot make a job of the observatory, which is too flimsy and will certainly blow away. I shall have to take on shore the after-galley and use it as an observatory after drawing all the iron nails and replacing them with copper ones. As we shall use it for magnetic observations, any iron in the building would affect the needle of the unifilar magnetometer and other instruments.

October 21st, Sunday.—The doctor read prayers as

usual. We played football on the floe, a strong wind and a temperature of 10° F. making it a rather doubtful enjoyment. I lent the crew a rifle to induce them to go out for a walk in search of a bear or a walrus, and thus get a little exercise, which is a difficult matter to induce them to do, as they do not like to face the cool wind. I requested Dr. Koettlitz to inspect the quarters both of the crew and the ship's officers and to report to me on their condition.

Weather : At 4 A.M. light N.N.E. wind veering to north and increasing to moderate gale by noon, and gradually decreased and veered to light E.N.E. at 8 P.M. Fine but overcast generally. Misty at times and two hours' fine snow. Aurora visible at 5.30 P.M. Two long streamers close together and running parallel from east to west across zenith in a large arch. Altitude, west extreme 40° , east extreme 10° , of a pale green colour.

I received a report from Dr. Koettlitz, of which below is a copy :

"CAPE FLORA, FRANZ JOSEF LAND,"
October 21st, 1894.

"F. G. JACKSON, Esq.,

"Sir,

"I inspected the quarters of the men in the forecastle as well as the galley, and those of the officers between decks to-day, and was satisfied on the whole as to their sanitary condition, with the exception of one or two defects which I now point out :

"1. There has been a leakage from the deck into the bunk of the boatswain. I recommended that it should be thoroughly cleansed by washing with Condyl's fluid, pending the time when the thaw sets in and the deck can be caulked. This will probably remedy the defect.

"2. The bunks of the firemen, being dirty, that they shall be cleaned.

"3. The bunks of the men Mouat and Dalziel being

damp, that the mattresses should be taken out to the galley fire and be thoroughly dried.

"4. A ventilator of the forecabin being closed because of a draught when the weather is windy, I recommended that it should be opened, and that a canvas cover or something which will answer the purpose be placed over it to prevent the wind from blowing through it.

"5. That to ventilate the galley a small scuttle between it and the deck be opened daily.

"I have the honour to be

"Your obedient servant,

(Signed) "REGINALD KOETTLITZ, M.R.C.S., &c."

October 22nd, Monday.—At 8 A.M. I was told that the dogs were barking around some black object on the ice near a berg about a mile and a quarter from the ship. Accompanied by Armitage I started off with my .303 rifle, the boatswain and another man following. We found it to be two walruses—two bulls—lying side by side at the very edge of some thin bay ice. We killed them both, but one in his dying struggles rolled on to the thin bay ice, which broke, and he sank. The other we at first tried by means of the ponies to drag to the ship, but two ponies and ten men could not move it a yard. It measured about fourteen feet in length, with proportionate girth, and must have weighed a couple of tons. We finally skinned and cut it up where it lay—a difficult matter, as the skin, and for some distance down into the flesh, had frozen hard—we cut it up into joints, which we sledged to the ship for our larder. These operations took most of the day.

I am having all the blood from the animals killed kept and frozen. Every day, a pound or so of the frozen blood is chipped out with an axe and added to

our soup. This, however, does not improve it in flavour, as it gives it the peculiar taste of walrus, which is not a pleasant one.

None of us are at all in love with walrus meat. It is very tough, coarse, and dark in colour, and has a distinct flavour of iodine. Bear is decidedly better, but, although we considered it very good meat in the Arctic, yet in England it would hardly be viewed as a delicacy. It is tough, flavourless, and coarse, and somewhat resembles beef in appearance; great care must be exercised to avoid cooking any fat with the meat, all must be carefully excluded, otherwise it imparts an extremely unpleasant flavour. I should much like to place either walrus or bear cooked à l' Arctic before the average London club man, and watch the expression on his countenance, and listen to his remarks on the subject.

Walrus shooting in bay ice is always more or less risky sport, from the fact that they have a way of almost invariably lying upon ice of a dangerous character and near the drifting pack at the edge of the fast ice. There they lie, with their tails almost in the water, looking at a distance like a number of large leeches. As we approach they raise their heads and look at us with their round staring eyes, as if to inquire by what right we venture to trespass upon their domain. If we remain quite still they will probably drop their heads again, but on approaching they become, as a rule, alarmed, a wild bellowing and snorting begins, and one or two slide into the water. Now it is time to fire, great care being necessary to shoot them in the head, and so kill them quite dead, for, if any life be left in them, they will roll into the water and sink.

I have sometimes seen pathetic sights of mothers

with their cubs, endeavouring to shield them from danger by clasping them with their flippers and swimming with them in their embrace. In cases of the young ones being shot dead, the mother has come up, and, seizing the cub with her foreflippers, has disappeared with it in the depths of the sea. I always avoided, when possible, interfering with either the mother or cubs, but singled out the bulls. In the water walruses, especially bulls, may be really dangerous when irritated, and often quite unprovoked from sheer pugnacity of nature will "go for" a boat, and, with their enormous tusks and great weight and strength, will tear a hole in it, and sink it. The unfortunate occupants would probably then have a bad time, should, as would probably happen, the walruses devote their attention to them. The bulls are far more pugnacious than the cows, and frequently, without any provocation at all, will assume the offensive.

Once, in our first autumn in Franz Josef Land, after the sun had left us, a companion and I were standing at the floe edge watching a small herd of cows and cubs disporting themselves a short distance off in the water. Suddenly a large bull put his head above the water, and came straight for us, bellowing angrily, and proceeded to clamber on to the ice, evidently with the intention of turning us off it. Unfortunately my companion fired at him, and he fell back into the water. I should have liked to have seen his method of carrying on war. On another occasion we were flensing some walruses we had shot upon a floating piece of ice about 12 ft. \times 12 ft. in size, when a large bull charged at us from the water, snorting and bellowing, and evidently in a very unpleasant frame of mind. I had just time to shoot him through the head as he gained the surface of the ice piece. There was not room for us and him, in a rowdy

mood, too, so I had to dispose of him, poor chap. He was, doubtless, annoyed at the slaughter that had been going on, and meant to take it out of us.

Their tusks are very powerful and of strong ivory. Their chief uses are for fighting with, to aid them in getting out of the water on to ice, probably for stirring up their food from the bottom of the sea, and in knocking holes through thin ice from underneath, to enable them to clamber through to the surface. On several occasions I have seen them so engaged, lying on their backs, tapping and working their tusks round and round, thus gradually enlarging the hole. Their chief food in Franz Josef Land is shell fish (bivalves), sea urchins, and other comparatively small marine life. Often, on the surface of the ice around their holes, I have found small heaps of shells and small stones. These at first puzzled me to account for, but, on examining the stomachs of dead walruses, I found them to be very contractile, and when empty are reduced to a small size. This being doubtless a provision of nature to reject the indigestible shell after the contents have become assimilated.

The pebbles are no doubt swallowed to aid digestion by crushing.

October 23rd, Tuesday.—I again visited the spot where I shot the walrus yesterday, and badly wounded two more which kept hanging about the blow holes in the thin bay ice; but I was unable to get near enough to harpoon and secure them, owing to the ice around being so weak. I spent the day trying to get them, and tried to approach them with a light Norwegian sledge, but the ice bent so under me that I had to desist.

Saw two dovebies partially in their white winter coats with black markings on the back. The sun is now quite

gone, and only casts a rosy glow over the southern horizon for a few hours about noon.

Weather: Calm and light south-west airs till noon, then light airs and winds from north-east and east. Overcast and foggy from 8 A.M. till 4 P.M., and fine clear weather during the rest of the day. "Frost smoke"* in great clouds over all open water, and the bay ice making very rapidly.

October 24th, Wednesday.—I again went to the spot where we had left the wounded walrus yesterday evening. One had disappeared, another was at a small hole with its nose just above the ice, but the latter was too thin to approach it, and there was no part of the walrus visible in which a harpoon could be fixed. We tried all the morning to secure him, but without success. A strong wind sprang up, and I got my right hand and nose frostbitten.

In the afternoon we cleared out the "after lockers," and carried the contents ashore to the huts.

Weather: Light easterly airs gradually increasing to a fresh breeze at 10 A.M., and continuing the rest of the day. Fine clear weather throughout. Could see great distances to-day, the atmosphere being very clear. Aurora at midnight arched across zenith from east to west in a large band. At each extreme 15° above the horizon. Streamers from north and north-west, with the main streamer moving to north-west. Colour, pale green.

October 25th, Thursday.—We tried again to secure the wounded walrus, but he disappeared about 11 A.M., owing to his inability to keep the blow hole open. He probably was drowned.

We continued taking small articles ashore, and stowing them away in the huts.

Weather: Moderate to light east wind till 10 P.M., then veered to light south-east wind. Overcast, misty weather generally. Slight aurora at midnight of pale green. Four short streamers 15° apart around ursi major and minor.

* "Frost smoke," which looks like thick smoke rising from a fire, is caused by moisture rising from open water, and becoming condensed on coming in contact with the cold atmosphere.

October 26th, Friday.—A report at 8.30 A.M. of "something" black on the ice about a mile and a half from the ship to the south. I called two of my men and we started off. We found seven walruses lying together close to a blow hole surrounded by bay ice. The dogs which had followed us, however, drove them off the ice into the water hole in the bay ice. We wounded four, two of them severely, and they (one of them a cow with a cub) tried to clamber on to the floe. I returned to the ship for a harpoon, gun, and a few hands to help us to secure them. On coming back we found that one was lying on the ice. I tried the harpoon gun on it, but it hung fire so badly twice that it exploded after I had taken it from my shoulder quite three seconds after the cap had fired, probably owing to the cold having contracted the communication between the nipple and the powder chamber. I finally killed it with a bullet at the back of the head from my .303 rifle, and it was secured by a seal club as it rolled into the water. We tried till 2 P.M. to secure the mother and cub, but the cub got shot by accident in the midst of some bay ice and we could neither move her from the spot nor reach her with a harpoon or club.

Weather: Calm in the morning, fine but cloudy generally; at noon light south-east airs. From 2 P.M. till 8 P.M. light E.N.E. winds. At midnight light E.N.E. winds and overcast.

October 29th, Monday.—I took a walk out to the floe edge, being accompanied by two of my men with our rifles to endeavour to increase our stock of fresh meat. While watching a small group of walruses about one hundred and fifty yards from the floe edge (among which were a cow and a cub) a bull walrus came towards me and proceeded to clamber on to the floe edge about five yards from us, bellowing at us all the time. One of my

companions unfortunately fired at him as he got on to the ice and he disappeared. He evidently intended to try and clear us off the ice, and it is a pity that he was not allowed to try, as it would be interesting to see how he would go about it.

I did a few jobs in the hut in the afternoon, and about 5 P.M. had a run on my ski across the floe. It is now quite dark by 3 P.M., and only twilight for a few hours at mid-day.

At 6 P.M. observed brilliant aurora, pale but vivid green in large band from east to west. At 6.45 P.M. thick cloud-like form of aurora covering ursus major which it concealed, being of a very brilliant pale green colour. It sent out long streamers to north and north-west and moved rapidly to west. At 8 P.M. aurora moving rapidly from east to west and from north to south in many arches and streamers, entirely covering the sky. The stars shone through all the other parts of the aurora except the one mentioned above. The ice cracking and groaning loudly at the shore caused by the tide.

October 30th, Tuesday.—Report of walruses on ice about two miles to south at 8.30 A.M. They were loudly bellowing and making a great noise. I started off with Armitage, taking young Heyward with me, the rest of the party following. We found about sixty lying near some bay ice with a large hole by them. They were chiefly composed of cows and a few cubs, with some bulls lying as outposts around them. As we approached a wild bellowing and snorting began, and on the firing commencing an indescribable scene of confusion took place. All the huge herd made for the limited water space, splashing, bellowing, and snorting; and these sounds, intermingled with the repeated rifle shots

suggested a battle in progress. Three were shot dead at once and others were badly wounded. We secured three, two others sank before we could get a hook into them. Armitage fell through the ice and unfortunately lost the new .450 Henry Express rifle. I afterwards shot three more walruses. One sank before a hook could be put into it, one we secured and landed on the ice, but the third I shot and fixed a seal club and harpoon in it, but owing to the ice which was in motion crushing down over it, and the ice around being too rotten to haul upon it with darkness coming on, we had to make a line fast to the club and harpoon, securing the other end to a boat-hook stuck in the ice. This we were obliged to leave till morning, hoping that the ice would not move more and that the frost will strengthen the ice around.

I had the black pony and sledge out, and the meat and skins were dragged to the ship.

A south-west wind had got up before we had finished, driving down the heavy ice upon the thinner bay ice and crushing and piling it up in hummocks, making a roaring sound like an express train in motion, occasionally emitting a sound like a distant heavy gun, and now and then a shrill whistle.

The solid nickel Government bullets are very useful if fired into a walrus's head, smashing the bones to pulp, but not giving sufficient shock to be effective if only coming in contact with muscle, but the Lee-Metford rifle with "soft-nosed" bullets are very destructive in their effect.

I came upon a walrus making a blow hole with its tusks from beneath the ice to-day. The latter was about five inches thick, and the walrus was lying on its back scraping and hammering at the ice above it and gradually enlarging the twelve-inch hole it had made. When

of sufficient dimensions it would clamber through on to the surface.

Weather: Calm till 6 A.M. Light south-west winds and airs till 6 P.M. Then gentle to moderate south wind till midnight.

Fine clear weather till 6 P.M. Then overcast, and five hours' fine snow.

October 31st, Wednesday.—Just after breakfast Heyward came rushing into the cabin saying, "Some one is shouting on shore like anything." I hurried on my "finsko" without waiting to secure them, having sent Heyward up the mizen rigging to tell me if he could see anything. He returned saying that the carpenter and others were on the top of the log hut shouting. I ran off with my .303 rifle, meeting one of my men on the top of the cliff, whom I had sent on shore to get a few articles from one of the huts, in a state of considerable trepidation, and just behind came Petersen and the carpenter with hatchets in their hands. At the same time I saw a bear on the floe below me, having wandered down from the huts. I succeeded in shooting him when near the stern of the ship. He was a young he-bear, and showed unusual boldness, quite disregarding the presence of the whole crew, whom the excitement had called out; he was marching about helping himself to anything he fancied, and had quite taken charge of affairs in his immediate neighbourhood.

My man tells me that after leaving the hut, in the rather dim light, he, when close to the entrance of the log-house, walked up to within a distance of ten or fifteen yards of the bear before he saw it. He turned and fled, shouting for assistance, and the bear gave chase. After taking the direction of the ship, and seeing that he would be overtaken, he succeeded in doubling back and reaching the log hut, with the bear close at his heels. The men inside watched the bear through the windows

until he walked away, and then went outside and climbed on to the roof and yelled to stop others from coming in that direction.

I went out in the morning to try and recover the walrus which we had left the previous evening with a harpoon and line made fast to it, taking Armitage, the doctor, Crowther, and three of the crew with me. Crowther I find to be a capital man, always active, willing and obliging. He sets, too, a good example to the crew, and does his best to keep them contented and happy. On arriving on the spot we found that the ice had shifted about four hundred yards or more towards the north (Miers Channel), and was much crushed and hummocked. The line and boat-hook had disappeared with the walrus which had gone to the bottom when the ice crushed over it. We collected a quantity of frozen blood from the ice to be used in our soup, which Dunsford and I fetched in the afternoon on a sledge.

Weather: Light to fresh S.E. wind and overcast generally. Eight and a half hours' of fine snow.

November 1st, Thursday.—Little differences between officers and crew are always liable to occur, especially in situations such as ours. To-day a little hitch of this kind came to my ears; and thinking it better to check in the bud anything of the kind, I had the crew down aft and addressed a few words to them, saying that I had found the majority capital fellows, that I should not allow the very small minority to contaminate the others, and I intend to stand no nonsense; that I will make them as comfortable as I can, and if they have any complaints to make them to me. At my request certain clauses of the ship's articles were read to them. That little difficulty being settled everything was pleasant again.

Poor chaps, they are not at all in love with the life here, and a little awkwardness sometimes is hardly surprising.

November 2nd, Friday.—We did odd jobs at the huts. I decided, out of compliment to Mr. Harmsworth, to name our little settlement "Elmwood." Strong to light E.N.E. winds, and then light to moderate north-east winds. Overcast and hazy till 8 A.M., with two hours snow; and then clear for the rest of the day. At 7.30 P.M. overcast, aurora E.N.E. 10° to 30° altitude. Another band above, and underneath it, extended to the west, altitude 20° . First band had numerous streamers.

November 3rd, Saturday.—Blowing from north-east. The ice to the south is driven from the land floe inside of the bergs, and the water now reaches to within three hundred yards of the ship, and extends west to Bell and Mabel Islands and east in the direction of Cape Barents. This was caused by the southerly winds forcing in heavy ice on to the weaker bay ice, followed by a swell from the south, and then the north-east winds blew the detached ice off the land. There is more water visible now than there has been for weeks. I put the aluminium collapsible boat and sledges in the stable store, and buried all the other boats in the snow.

The cabin stove has been smoking villainously all along, and for the last few days the place has been full of smoke, in spite of its being cleaned out and everything that could be thought of done to prevent it. We shall be very glad to get ashore into the hut, as our quarters here are daily becoming more uncomfortable, the ice is accumulating everywhere, and everything freezes a few feet from the stove. The cabin door is coated with ice only a foot or two off the fire.

The crew are going on excellently, and doing their work cheerfully and willingly.

November 4th, Sunday.—The floe is still further broken away, and I am beginning to have apprehensions of its going away altogether, taking the ship with it, but I think the grounded berg near the ship will hold it unless it is much eaten away by the action of the water underneath.

We took a number of things ashore and began to fit up the interior of the hut. It is beginning to look quite nice, the green felt with which it is lined much increases the warmth and improves its appearance. We are doing our best to make it as comfortable as possible under the conditions, for it will be our headquarters for a long time to come.

The welfare of an expedition depends largely upon the discipline, comfort and absence of degeneration of its members, and I consider it to be the first duty of a leader to see that his comrades are as well cared for, as comfortable as possible, and live in as civilised a manner as circumstances will permit. Without this the *morale* of a party cannot be kept up.

I dug the bark canoe out of the snow and put it in the stable as I fear the weight of the snow in the drift may crush or damage it.

November 6th, Tuesday.—Four walruses were discovered lying on the edge of the floe. I shot two, but one sank before it could be secured, the other we cut up into joints. We took more stores out of the lazarette and sledged them up to the hut.

When returning to ship with Armitage at 7 P.M. we were met by several members of the Expedition (one of them with my .303 rifle) coming to our possible rescue, as a bear had been seen a minute or two previously prowling

between the ship and the hut. Two of the men and I then started off to look for him. It was very dark owing to there being no moon, and overcast and misty, but after looking about for some time I espied a yellowish object standing by the entrails of the walrus I had shot in the morning, and a warning hissing snarl told me what it was, and to look out for squalls. I went up to within fifteen yards and fired, a loud roar telling me that the shot had hit him. This was followed by a splash in the water, as he broke through the bay-ice. Owing to the darkness we were unable to see what then became of him.

Weather: Light to fresh N.W. wind, shifting to W. at 11 P.M. Overcast from 6 A.M. throughout the day.

November 9th, Friday.—Temperature—26 F. below zero with a light breeze. Armitage and another shot a young she-bear to-day. It left the floe and took to the water on being pursued and was shot there. We ran down the twelve feet Norwegian boat and getting into it I put off in the darkness to secure it, the bay-ice in the sea rendered navigation troublesome, so I had a long line attached to the little boat in case I got into trouble. After some difficulty, I managed to secure it just as the ice closed in, and I was hauled on to the floe out of harm's way.

November 10th, Saturday.—I got up with a bad attack of migraine headache and could eat no breakfast, which is a very unusual thing for me, and was lying upon my bunk when the report of a bear being near the ship roused me up. I started off with my .303 rifle, having quite forgotten my headache. The numbers that followed me, however, scared him off. I returned to the ship and had fat put in the galley and cabin fires, to try and draw him up, as he was still in sight to leeward. While so engaged, Petersen appeared on the cliff shouting and

gesticulating, and as I surmised that there was another bear near the hut where the carpenter and some men were at work, and that they might be in difficulties there, I started off, leaving Armitage to conduct operations against bear number one. On reaching the plateau I saw the new comer—for it proved to be a bear—on the fresh water pond near the hut, and just then the carpenter fired at him but missed, and he ran off down the steep slope on to the floe, down which I glissaded after him and managed after some manœuvring to approach within seven yards of him and finished him with one shot behind the left ear. Seeing several people starting off in pursuit of bear number one, I ran across the floe to head him off, but he took to some thin ice and his pursuers from the ship fell behind. I followed him for about three miles further over the old floe and bay ice, when eventually he took to the water and disappeared without my getting a shot. When returning I unfortunately broke the stock of my rifle. I have set Child and the first engineer, to repair it, as they are capital hands at any work of this kind and are clever with their fingers.

The bear I killed had only grass in its stomach, which Fisher tells me is of a non-nourishing character. Bears evidently can go for a very long time without food by drawing on their fat. Fasting being followed when they kill a seal, by a gorge which again lasts them for some time. We have sometimes found them after such a meal blown out to such an extent as to resemble a balloon. Grass is probably swallowed as a stop gap "to fill an aching void" in the stomach.

November 11th, Sunday.—Blowing a strong gale from E.N.E. with a temperature varying from 28° F. to 35° F. below zero. Bitterly cold, and troublesome to be

out owing to frost bites being so frequent. The temperature in the berths is 5° F. below zero—rather a cool temperature for a bedroom!

I went across to the huts several times to-day, and was engaged in getting some clothing for the boatswain from No. 1 canvas hut about 5 P.M., Maxim, the Russian carpenter, was holding the door to prevent the wind getting inside and carrying the light hut away, when he suddenly yelled and rushed away letting the door fly open. I at once suspected that the proximity of a bear was the cause of his trepidation, so I came out, made the door fast, and proceeded to investigate matters. I had hardly gone five paces from the hut, when in turning the corner of No. 2 hut I came face to face at three yards distant with a large bear. As I was unarmed I retraced my steps and made for the log hut where I had my rifle. Maxim, by-the-bye, had clambered on to the top of the stable, where he was yelling lustily for me. I had unfortunately got both hands frozen, and I had to delay for nearly two minutes while one of my men, whom I found in the hut, rubbed them, before I could handle my rifle. I then started out to find that Child and Allan had arrived on the scene from the ship (which the bear had previously visited) and had fired two shots at it, but without hitting it, as it stood on its hind legs trying to reach Maxim on the top of the stable. The bear was then retreating towards the floe. I gave chase, glissading down the steep slope and pursued him across the ice, where Armitage and young Heyward joined me and fired three distant shots at him. They fell behind in the chase, but I managed to head the bear near the two bergs to the south-east of the ship, he going round them one way and I meeting him face to face by going round them the other. I fired when he was about fifteen paces off,

and he fell, but struggled to his legs again and shambled off. Frozen hands and the darkness, although the moon was shining brightly, prevented my getting a cartridge into my rifle sufficiently quick to stop him. He then took to the old floe and I lost sight of him, but followed him among the high hummocks by his blood and tracks, and at last suddenly coming upon him at a distance of three yards I put a second bullet into his neck, and he

BRINGING BACK THE BEAR

managed again to scramble a few yards and then stood snarling and snapping and making short rushes at a dog which had joined me. I gave him one more shot which straightened him out. Armitage then rejoined me, and we set to work under the lee of a berg to rub our frost-bitten noses and chins as the temperature was standing at 38° F. below zero with a gale of wind blowing. I then returned to the ship, turned out all the land party, and called for volunteers from the crew as the weather was so bad, and it was Sunday, and started off with a sledge

to fetch the bear in. We were all muffled up, leaving only the eyes showing, so as to avoid as much as possible getting frost-bitten, and I utilised a cloth gun-case to wrap round my face for this purpose. We got him to the ship without mishap. He turned out to be a fine full grown he-bear. He gave me fine sport. "Bear" was the sole topic of conversation for the rest of the evening, and the various adventures of Maxim, myself, and so on. The former on my return to the log hut later on, I found rather pale and excited, and he explained in Russian that the bear had come up within "three arsheen" (about three yards) of him when outside the hut holding the door for me. He had to run for it, and by dodging round it got away from the bear and clambered up the ladder to the roof of the log stable where I soon heard him.

Weather: Moderate to fresh gale from E.N.E. decreasing to fresh breeze at 8 P.M. and shifting to N.E. at midnight. Sky clear, gusts of force from 7 to 8 till 6 P.M. Temperature from 28° to 38° F. below zero. At 7 P.M. brilliant aurora from E. to W., breaking into various shapes, shooting out flames of pale green banded with red. Disappeared at 7.15 P.M.

November 12th, Monday.—Three more bears put in an appearance at the log hut to-day. One of which rubbed its nose against the window-glass, so Maxim says, and peeped in while he was looking out to see what the dogs were barking at, causing him considerable alarm. The other two were scared away before I could arrive on the spot, and although I searched for them all over the floes with the dogs I could see nothing of them. The increase in the number of bears seen now is due probably to the south-west and south-east winds having brought in the ice on which they were, towards the land. It is quite possible that they come to Cape Flora to get grass or sedge as it is one of the very few spots where any grow in this part of the world.

Did odd jobs at the hut to-day.

The skipper is again in bed. His health is anything but good.

Some of the party left their bunks and slept in the cabin—on the table, or on boxes, &c., as the cold in their cabin is too much for them. It is 35° F. below zero at the hut and a strong gale blowing. The temperature in the cabins has been considerably below zero.

The cabin door eighteen inches from the stove is coated with ice, and so are most things a short distance away from the fire.

Weather: Fresh to moderate N.E. wind decreasing to calm at 8 P.M. At midnight S.E. airs. Fine clear weather throughout. No aurora.

November 13th, Tuesday.—At 4.30 A.M. Crowther, who had happened to come up on deck, came down and woke me saying a bear was near the ship. I tumbled out of my bunk, putting a coat, waistcoat and trousers over my pyjamas and a pair of "finsko" on my feet. It was brilliant moonlight and quite calm, and I could see the bear at some distance off with five or six dogs yapping round him. I ran between him and the bay ice towards which he was retreating and so headed him. He came at me at a good fast trot and when at six paces off I fired and he fell dead, the bullet entered his neck and penetrated to the right lung, where it was afterwards found. I then went up to the hut and fetched Maxim, and he, Crowther, the watchman Mouat, and I dragged him on a sledge to the ship. He was an unusually large he-bear. He had every intention of "going for" me when I shot him, and I stopped him just in time. His stomach and intestines were quite empty, so he was evidently very hungry. I endeavour to trace the course of all bullets and to recover them when possible, to ascertain the exact amount of injury caused by each particular bullet, so as to get an idea as to which is the

most effective. In this the doctor is very good in helping me, and frequently spends hours in tracing them.

We did odd jobs at the hut to-day.

Temperature rose from -30° F. below zero to -16° F. below later in the day.

November 14th, Wednesday.—I shot a bear at 9 P.M. on the floe. It was bright moonlight at the time, and several dogs were barking around him. He showed a disposition to clear out, so I lay down on the ice and imitated the movements of a seal, quite taking him in, for he at once came running towards me, and when at ten paces off I fired, finishing him in two shots with my .450 Express rifle.

It was curious to see the look of doubt and misgiving that came into his face as he approached me. On nearer inspection, evidently thinking me the oddest seal he had ever seen, he began to think better of it, and when I fired was on the point of reversing.

November 15th, Thursday.—The doctor and I ate a little fried bear's liver for breakfast; the others did not fancy it. This has been held by many Arctic explorers to have poisonous qualities, and he and I desired to test it. We ate about a quarter of a pound each, and although I suffered from a bad attack of headache six hours after, I am not quite sure that the liver produced this unpleasant effect upon me, but intend to further test it.

The doctor has headache also. It may be the liver that is troubling both of us.

I spent most of the day writing. A great rise in temperature to $+15^{\circ}$ F. (a rise of 54° since the 12th). The cabin and bunks are dripping with water.

Weather: A.M. light S. wind. From noon to midnight light to strong N.W. wind. Overcast throughout. Twelve hours' fine snow. Very dark all day and could only see a very short distance. Temperature 7° F. to 15° F.

November 17th, Saturday.—Cloudy, snowing, and very dark all day. Midday indistinguishable from midnight, which has been the case for the last week or ten days. We have been all very busy to-day completing our preparations for moving into the hut. After dining on board the *Windward* and drinking to her luck we adjourned to the hut and had a glass of port each there, and smoked some of our small stock of cigars. I proposed as a toast—"Good luck to 'Elmwood,' and may we all be very happy here and never leave it except to return to England *after* finishing our work here." The musical box was carried up to-night, and much to our amusement the jar caused by its being set down started it playing the moment it was brought into the hut. It did not play "There is no Luck about the House," so we may take it as a good omen, if any of us believe in such things. We all slept at the hut to-night, using the reindeer bags as mattresses, placed on the floor with blanket bags to sleep in.

Weather: Fresh, decreasing S.E. wind at 2 A.M. Shifted to E.S.E. at noon. Calm at 4 P.M. Light E.N.E. airs at 8 P.M. Calm at 10 P.M. Overcast throughout. Twelve hours' snow.

November 18th Sunday.—I had a cold bath this morning, which was a great luxury after the deprivation on board the *Windward* of this necessary adjunct of the toilet for the last few weeks. We have arranged a bathroom in our only living-room with canvas screens dropped from the ceiling, and which rolled up when not in use. All water used has to be melted from snow. This prevents our having more than one bath in a morning, but each man has one once a week. Our actual living space is about 13 feet by 12 feet, in which eight of us live, sleep, and do our work. The space is rather limited, but we are happy enough. Our bathroom on

the ship, which also did service as a scullery, had long since become unusable, and the close quarters there and overcrowding had not been conducive to cleanliness. We went on board for meals, as the little kitchen here is being used as a carpenter's workshop. Ours is without doubt the most suitable, best, and most comfortable house ever put up in this latitude, and I am thoroughly satisfied with it and the arrangements we have made in it. My journey through Northern Russia in 1893 would have been quite repaid alone by enabling me to hit upon such a suitable Arctic habitation as this.

I sent the following notice to the forecabin, as I think it will tend to get the men out more, and also will secure us more bears than we should otherwise get. I think that even now we have sufficient fresh meat to give the Expedition one meal of fresh meat every day and the crew four times a week. This, if the crew can be induced to take sufficient exercise, will keep us all from scurvy, I hope. Doubtless, too, I shall get more meat shortly, so that little tinned need be used.

"NOTICE"

"In the event of a bear being seen, information should be *immediately given* to me, either by night or by day. Should I be able to fire a shot at it, 2s. 6d. (two shillings and sixpence) reward will be given for each bear on arrival in London to the person who first brought the information. The same reward will be paid for walrus on the ice or for foxes.

"A written order will be given by me for the payment of the rewards.

"FREDERICK G. JACKSON.

"N.B.—A rifle will be kept in the cabin for the pro-

THE INTERIOR OF OUR HUT
(Taken by candle light. Five hours' exposure.)

tection of persons against bears while carrying the information to 'Elmwood.'

"November 18th, 1894."

Weather: Light N.N.W. wind at noon, veering to N. at 4 P.M., and increasing to moderate breeze and decreasing to calm at midnight. Cloudy and overcast in the early part of the day, clearing in the afternoon and quite cloudless at midnight. At 6 P.M. observed a brilliant aurora, similar, in most respects, to that of the 11th and 14th, but with not quite so much colour, but larger, from N.E. to S.W., moving in a circle around the heavens against the direction of the hands of a watch at an altitude of 70°. Quite disappeared twice, and again appeared at the same place and shape. Had a double corona,* one to N.W. and one to S.E.

November 19th, Monday.—Put up a weather-board box 6 ft. 6 in. high, 4 ft. 3 in. long, by 4 ft. wide, for the George's barometer and the Meteorological Office aneroid. Did odd jobs in the hut. No bears seen since our last kill. Our house is without doubt the most comfortable ever put up in these latitudes, and inside has quite a cosy and even a pretty appearance. The walls are covered with green felt, the floor with sheets of brown paper, with a patterned felt over it, and the ceiling with the latter felt, but with the reverse, or grey, side exposed to view. It is well ventilated by means of two apertures—one perforated five-inch aperture three feet from the ground (thirteen $\frac{3}{4}$ -inch holes) on the southern wall of the house, and capable of being closed with a plug of wood. The other ventilating hole is four and a half inches in diameter, and is in the roof near the stove, and can also be closed with a plug when necessary.

The photo of Mr. and Mrs. Harmsworth, draped with Jacks, and also those of the Queen, Prince and Princess of Wales, also draped with Union Jacks, adorn our walls, added to which are etchings, some signed by Frank

* By a corona I mean that the streamers formed a shape at the zenith resembling a crown.

Payton, kindly given to me by Mrs. Harmsworth. They are entitled "Not at Home," "In it," "The Sheik's Daughter," "Notice to Quit."

I have a small cabin 7 ft. 11 in. by 4 ft. 10½ in. which I use as a receptacle for my property and to sleep in. My friends' photos adorn the walls of my "room," and I sleep on the floor, using, like the rest of the Expedition, my sleeping-bag as a mattress, and rolling it up during the day, thus giving more room than a fixed bunk would.

The doctor and Armitage together occupy a similar cabin on the same side of the hut.

The rest of the Expedition sleep on the floor of the living-room, using as mattresses their sleeping-bags, which during the day are rolled up and stowed away on a rack on the ceiling near the entrance. The hut is only 7 ft. high. As the doctor is 6 ft. 1½ in., and I and one or two others are about 6 ft., it doesn't give us too much room above our heads when racks are fixed to the ceiling. The personal property of the Expedition is stowed away on shelves, which together with bookshelves occupy every available space on the walls. We have a small library of books, kindly presented to the Expedition by Mr. Marston, but we are very short of Arctic literature. At present we are using one small slow-combustion stove 2 ft. 2 in. by 1 ft. 1 in., which we find quite sufficient for heating the hut, but I have piping for an ordinary stove to go alongside it, of rather smaller dimensions, in case at any time we require extra heat. In the corner next the storeroom, which is about seven feet by five, I have placed a covered cask 4 ft. 6 in. by 33 in. with a cock, into which snow is daily put and is melted by the warmth of the room. One member of the Expedition has a bath each morning, our bathroom being two canvas screens which can be dropped from the ceiling

A CORNER OF MY CABIN

and rolled up and tied in position when not in use answers admirably. No hot baths are allowed, as these would cause too much moisture. My own guns stand in a rack in my cabin, and the Expedition guns in a rack in the living-room.

November 20th, Wednesday.—We have been very busy to-day removing the table from the cabin on the ship to the hut, as this is necessary I find, and in carrying goods up.

We had our first meal at our new quarters to-day—dinner at 7.30 P.M., accompanied by a bottle and a half of sherry amongst us in honour of the event. I proposed as a toast "The healths of Mr. and Mrs. Harmsworth and all our friends," which was enthusiastically honoured. Our chairs chiefly consist of packing-cases turned up on end and a stool or two.

Our cook gave us an excellent dinner, and quite changed the character of our bear's-meat fare. I now feel easy about the winter so far as fresh meat is concerned, having killed and committed to the larder fifteen bears and seven walruses up to date (in two and a half months). We shall doubtless get more bears yet. I have, too, all the blood kept that can be saved.

Weather: A.M. A gentle wind decreasing to calm at 10 A.M. Light E. airs at noon, rapidly increasing in force and shifting to N. at 2.30 P.M., and blew a fresh gale at 6 p.m. It began to decrease at 9 P.M., and rapidly decreased to calm at 2 A.M. of the 22nd. Overcast throughout till 11 P.M. Snowing hard at times and driving fiercely during the gale. Quite clear at midnight. Drifts from two to seven feet high.

November 23rd, Friday.—Snowing, with a high south-east wind, all day. Snow drifting. Another rise in temperature.

Did odd jobs; cleaned my guns and fixed up the Expedition gun-rack. At 9.30 P.M. some of us went for

a walk as far as Sharpe's Rock. Still snowing, and driving hard in our faces. We returned at 11.30 P.M.

Weather: At 10 A.M. moderate E.N.E. gale, unsteady, shifting round to E. and back again. Moderated to strong wind and shifted to S.E. at 10 P.M. Overcast and snowing hard throughout. Snow driving furiously before the wind.

November 24th, Saturday.—Have been engaged with four members of the Expedition in digging out the horse-sledges from the snow and making roads through the drifts around the house. Some of my men and seven of the dogs accompanied me for a walk after dinner. Went nearly as far as the glacier. Snow driving before the wind and thick mist, made it difficult to pick one's way.

I started two-hourly watches for observations of instruments, which are continued through the night. I take from midnight to 2 A.M., the doctor from 2 A.M. till 4 A.M., Child from 4 A.M. till 6 A.M., Burgess from 6 A.M. till 8 A.M., when Armitage comes on. The first three of us change watches with each other every night. We take it in alphabetical order to sweep the house out every morning and to do housemaid's work generally.

Weather: Light to moderate E. and E.S.E. winds throughout the day. Overcast throughout. Fine snow fell for eight hours. At 8.10 P.M. a sharp shower of rain fell of three minutes' duration. At 8.20 fine snow falling, the wind warm and soft, with a very remarkable rise of temperature.

CHAPTER IV

OUR ARCTIC HUT

November 26th, Monday, '94.—We did odd jobs about the hut and stable. Child, who has charge of the lamps, tells me that we burn three and a half pints of paraffin in the twenty-four hours—ten lamps being either occasionally or constantly burning. Three from 8 A.M. to midnight. One all night for those on watch. The rest are only lighted occasionally—the hurricane lamps for example, for going to the stores, and for Maxim's use in the stable. No bears have been seen since the 14th. We shall see more doubtless when the moon returns.

Weather: Wind varying from light airs to moderate breeze. Chiefly from E. and E.N.E. Overcast cloudy weather generally. Two and a half hours' fine snow.

November 28th, Wednesday.—At 11.30 A.M. we all went out to the gully skinning, and continued our exercise till 2 P.M. One or two of us succeeded in running the full length of the gully over the slope on to the floe without a fall, which in the darkness and with stones in the way and sheets of icy snow at intervals gives lots of fun and some bruises.

Weather: Wind varying in force between light and fresh from E. and E.N.E. Fine clear weather generally. Red glow of dawn at noon on southern horizon, but a very faint twilight indeed for a few minutes.

November 29th, Thursday.—We did odd jobs about the place, and after lunch at 1 P.M. the members of the Expedition went to Ski Gully with shovels and picks to

loosen the icy snow and to try and remove the boulders on the slope. I fear our ski run would not be thought much of in Norway, as the gales blow all the snow off the slope from the talus of the rocks, and from the plateau, and cut into deep rifts the hard snow in the gullies, but it is the best we have. I sent a letter of invitation to the skipper, the two mates, the ice master, the two engineers, and the carpenter to come to the hut tomorrow night for a concert and supper, at 8 P.M.

Weather: Wind calm to strong from E. and E.N.E. Overcast and cloudy weather generally. Two hours' fine snow, and the snow driving during the latter part of the day.

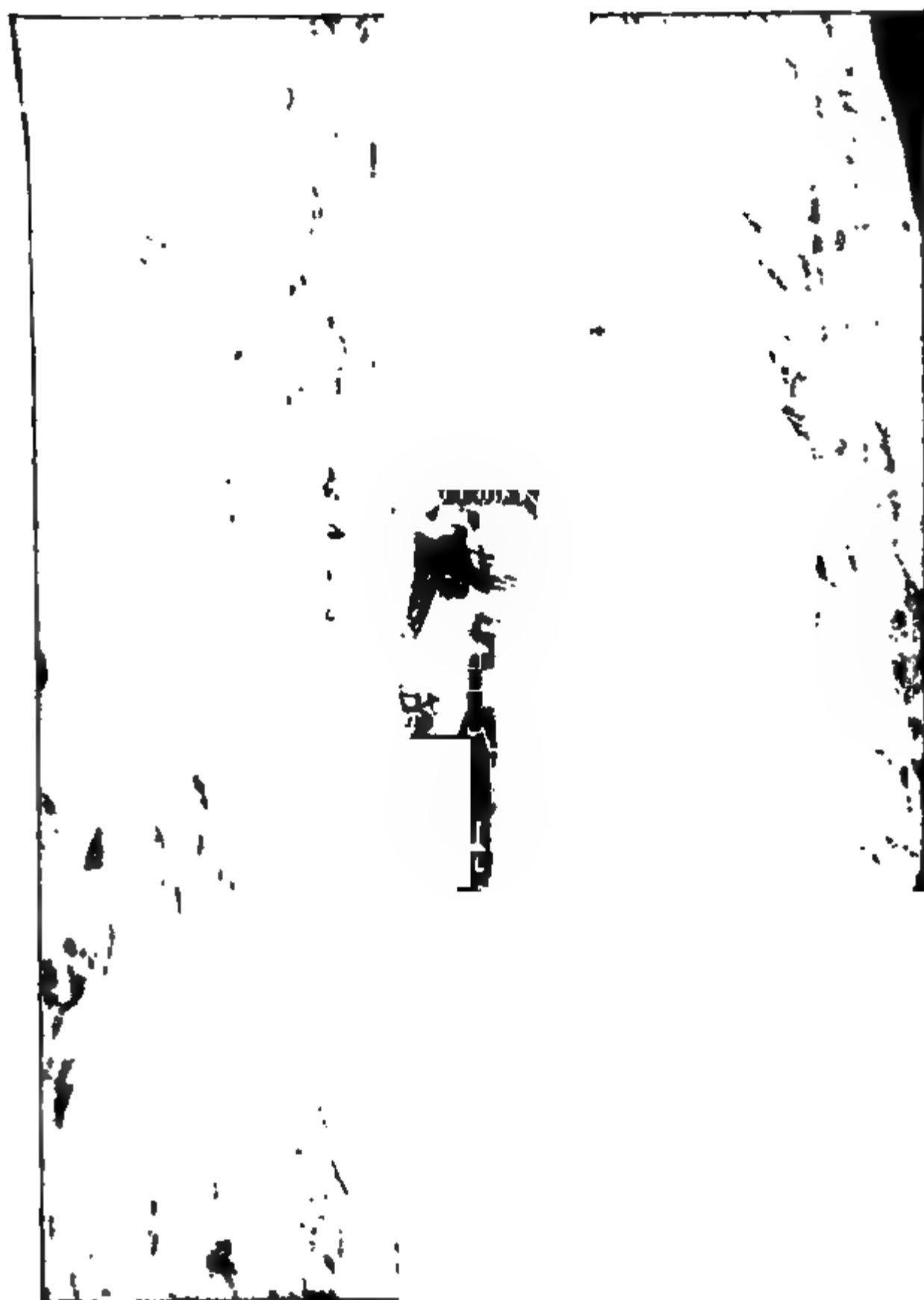
November 30th, Friday.—The ships' officers put in an appearance at 8 P.M. exactly, carefully rigged up in their best clothes. The evening was passed in smoking, singing, and the consumption of sundry whiskies—for this counted as a gala day, otherwise we only have one nip each on Saturday night—and finishing up with a light stand-up supper. The visitors proposed my health and wished good luck to our undertaking. The evening passed very pleasantly.

Weather: At 2 A.M. moderate decreasing E. gale, shifting to N.W., with light airs at 4 P.M. and again shifting to E. at 8 P.M. Snow driving furiously during the early part of the day. Gusty towards midnight. At 4 P.M. two auroral streamers to N.W. At 7 P.M. auroral band from E. over zenith to W. At 8.30 P.M. the same, both moving rapidly to W.

December 1st, Saturday.—Temperature to-day from 17° F. to 20° F. below zero being colder than for some time past.

Although we are all as jolly and as happy as sand-boys, I think the perpetual darkness and consequent reduction in the amount of exercise and the deadly monotony have their effect upon us. Appetites have fallen off lately very much I notice, and the men are paler than they were.

OUR HUTS BY MOONLIGHT IN WINTER



Weather : Varying force of wind. Light airs to strong breeze from E. to E.N.E. Fine clear weather throughout. At 10 A.M. a few auroral streamers from N.E. to W.

December 2nd, Sunday.—We walked to the East as far as the Castle Rock in the afternoon, being out from three till six. And again in the evening we walked from 8.30 till 11.15 P.M. Much warmer to-day the weather being calm and the thermometer ranging from 13° F. to 20° F. below zero.

The moon which we shall get back in two days appears even now to have its effect in making it less dark if the sky is clear. A slight orange tint is still noticeable on the southern sky at midday, indicating the whereabouts of the direction of the sun.

Weather : Calms and light airs from N. and N.W. Fine clear weather throughout. At noon three auroral streamers extending to an altitude of 38° to N.W. A faint red glow to S., but a very faint twilight.

December 3rd, Monday.—My right arm, which has been painful ever since the second week in September, when I ruptured some fibres of one of the muscles in lifting packing cases of goods, during the last few days has been especially so. The doctor who has tried several remedies ineffectually, has now bandaged the whole forearm to above the elbow with a broad elastic bandage to see if pressure will cure it.

December 4th, Tuesday.—The after galley, which the carpenter has been at work at, altering it into an observatory, was sledged up from the ship to-day—all hands being engaged at it. It will answer very well when the iron nails in it are replaced by copper. This is necessary as we shall use it for magnetic observations. Iron nails would affect the needle.

The moon is due back to-morrow. We are all looking forward to it immensely. There is a very faint twilight

for a few minutes at noon each day when the sky is quite clear, and a faint orange tint to the south. But midday and midnight have practically nothing to distinguish them so far as light is concerned, even on clear days or nights, and when the sky is overcast, as is usually the case, there is nothing whatever.

Weather: At 2 A.M. strong N. wind, decreasing and shifting to light W. wind at 6 A.M. From 8 A.M. till 8 P.M. gentle to light N.W. wind, and then calm till midnight. Fine clear weather throughout. Very gusty at times in early morning.

December 5th, Wednesday.—The moon put in an appearance in the first quarter for an hour or two to-day. The minimum thermometer shows 42° below zero. There is no wind this evening so it is not tryingly cool. The bay floe in which the ship is lying showed to-day by measurement three feet nine inches in thickness.

Weather: At 2 A.M. gentle N. wind. At 4 A.M. fresh N.E. wind. At A.M. fresh decreasing E. gale. At 10 A.M. strong decreasing N.E. wind. From 6 P.M. till midnight calm. Fine clear weather throughout. At 10.5 P.M. brilliant aurora, beginning in long streamers from E. through S. to W. Coming to apex at 10° below the polar star at 10.15 P.M., with a long ridge of thicker light at 5° above horizon, spreading out like a fan. Some parts of the band thicker than others, and separated into circles. At 10.25 P.M. a fringe of streamers changed from pale green to prismatic colours of rose, brick-red, and bright green, and moved rapidly laterally to E. with shimmering appearance.

December 6th, Thursday.—We went out for a walk twice to-day accompanied by the dogs. Very blowy with heavy gusts, driving hard shotty snow before it, which cut our faces, making it very unpleasant. Temperature 22° F. below zero.

Weather: At 2 A.M. gentle E. wind shifting to W.N.W. and N.W., and increasing to a strong wind. At 10 A.M. fresh N.E. wind, shifting to moderate increasing W.N.W. wind at 4 P.M. At 6 P.M. a gentle N. wind. At 8 P.M. N.W. At midnight a gentle increasing N. wind. Sky clear. Gusts at force 7 to 9 from 10 A.M. till midnight. Snow driving fiercely.

December 7th, Friday.—Blowing very hard all night till 9 A.M. with very fierce gusts and driving snow, very hard in consistence. About this time it slackened off to a calm.

After lunch all the party accompanied me with their ski to try Ski Gully, but we found that the gale had quite spoiled it, having blown away all the loose snow, and even had cut hard compact snow into gullies and ridges. We tried it for a time but found it too unsatisfactory to be worth continuing, as our progress down the slope became a series of tumbles as we bounced from ridge to ridge on our ski in the darkness. The prone position reached by a resounding fall became a trifle monotonous after a time. We took our ski off, as the whole of the plateau at the foot of the talus is again swept clean of snow, and went for a walk to beyond Sharpe's Rock. It was moonlight, calm and pleasant, and the thermometer stood at 20° F. below zero.

Weather : At 2 A.M. strong N.E. gale. At 4 A.M. a whole N.W. gale, gusts at force 11 at times. At 1 A.M. a fresh gale at N.N.E. decreasing. At 10 A.M. moderate N.E. wind. From noon till midnight light variable airs and calms. Fine and clear overhead. At 6 P.M. clouds passing rapidly from N.W. At 10 P.M. a large semi-circular halo around moon with a radius of 14°. Pale green band of aurora shot rapidly across the sky from E. over zenith to W. at 10.15 p.m.

December 8th, Saturday.—The mate came up to ask if I can let them have a little paraffin as they have run out at the ship. I gave him ten gallons to go on with.

Banked up the east and north-east side of the house with snow, as it is cold on that side and ice is collecting on the felt on the wall on that side of the room.

We went for a walk over the floe as far as the two bergs at "Bear Corner." I named these two bergs "Bear Corner" owing to this spot having been the scene of many good bear hunts. The old floe to the east, con-

sisting of heavy hummocky ice, is fringed at the edge by a high pressure ridge which runs for half a mile or so bordering it, outside of which is a narrow expanse of fairly level ice, giving the appearance in the moonlight of a covert side enclosed by a hedge, high fantastic hummocks taking the place of trees and undergrowth, and the level ice outside, the field adjoining the wood. It often recalls scenes of pheasant shooting in November to me. Owing to the moon being quite clouded over, we had many falls over hummocks of ice. The doctor and I again went for a walk in the evening starting at 10.15 P.M. and returned at midnight, going west till the snow coming on heavily we returned.

December 9th, Sunday.—Blowing with driving snow, and, owing to its being overcast, very dark. Cleared up towards night, and the doctor, Child, and Heyward accompanied me for a walk east. When crossing Ski Gully we found that the snow had drifted across it and that it was in good condition for ski-ing. We returned for our ski, and the doctor, Heyward and I amused ourselves till midnight, running down the gully and over the slope on to the floe, the moon having now risen afforded a fair light.

A temperature of 17° F. below zero and a stiff breeze with brilliant moonlight, made it cool but pleasant. I could see open water about three miles to south-west of us, but none elsewhere.

December 11th, Tuesday.—Blowing very hard from the north. About 10.30 A.M. three boards from the roof of our hut were wrenched off and carried away, and in their flight through the air knocked off the range chimney-pipe and badly doubled up one from our sitting-room stove.

These casualties were followed by the high flagstaff

On the hut falling, and smashing the east window, both inner and outer, on its way down. Two of my men and I went up on to the roof and nailed down one or two

"BEAR CORNER"

other boards which had started, but we had to crawl along at full length to avoid being blown off, and as the thermometer ranged from seventeen to twenty-eight

degrees below zero during the morning, it was cool work ; we constantly got our faces and hands frozen during the operation. Dunsford and I afterwards carried the house refuse in a case to the edge of the cliffs, where we dumped it. While so engaged I left the sledge for about ten seconds, and on turning round found it had disappeared, the wind had carried it off ; but where it had gone I had not the least idea. As I concluded that it had been blown over the high precipitous slope I glissaded down it on to the floe, but after a search of nearly an hour I could see no trace of the sledge. I, however, discovered later on that Dunsford had found it jammed against a rock at the edge of the cliffs quite uninjured. It was difficult to find it in the darkness and the high gale with driving snow.

The biting cold wind was driving hard shotty snow, and altogether it was one of the worst days I have known. I got frostbitten as usual on my right cheek and chin, and Dunsford fared much worse. I sent an invitation to the crew to come here on Thursday evening at eight o'clock for a concert and supper. I am anxious to find amusement for them.

The doctor, who adds dentistry to his many accomplishments, stopped a tooth for me to-day.

December 12th, Wednesday.—An improvement in the weather. Bright moonlight and only a light breeze blowing till late in the afternoon.

I found that part of the roof of the dogs' house had been torn off by the gale, so I spent most of the morning searching in the darkness for the boarding that has been blown away. After lunch the doctor and I went for a walk south over the floe to the edge of the bay-ice skirting the open water. The gales have driven the ice off the land floe to within two miles of the ship. I took

my .303 rifle and the dogs with me in the hopes of meeting with a bear. The carpenter is still working at the observatory, and is fitting up the interior.

I went to examine our ski-run but found that the gale has spoilt it for the present. Every movable particle of snow is swept off the floes and what remains is packed as hard as ice. I find the slow combustion stove burns forty-five pounds of coal in the twenty-four hours, keeping up a temperature of about 50° F. in the hut.

December 13th, Thursday.—Blowing hard, with drifting, driving snow as usual. This is the windiest spot I ever put foot upon! The moon was obscured by an overcast sky all day. I went for several constitutionals as usual in the course of the day, but owing to the bitterly cutting wind and driving, hard snow it was a mixed pleasure.

The crew turned up at 8 P.M. in spite of the weather, remaining until midnight, the evening being spent in singing and smoking, accompanied with whisky toddy and a light supper.

We are all very well indeed, and I am congratulating myself on having been able to shoot sufficient fresh meat to supply our requirements for the winter. This I am confident is the great secret of keeping a party healthy, together with giving men plenty of work and walking exercise. We are always occupied and busy. I felt very uneasy until I had been successful as to our larder.

The darkness combined with the vile weather is trying, as we of necessity take our exercise like a dose of medicine, for plodding and tumbling about in the darkness is often the reverse of a pleasure, and falls over rocks and ice-hummocks are of too frequent occurrence to be altogether amusing. We are often very glad when we have taken our walk and can return to the hut.

December 14th, Friday.—To-day is much as yesterday so far as weather is concerned. We went for several walks as usual. No ski-running is possible, as the gales prevent the snow resting on the slopes.

Child is engaged in soldering up in a tin case the sixteen letters I have for Nansen and his party. This will protect them from damage and enable me to take them with me sledging, as there is a thousand-to-one chance that I may meet him or some of his party when we are away.

I have had a muzzle made for "Carlo," the retriever, which he generally prefers to wear cocked over his left eye, giving him a very Bill Sykes-like appearance. Otherwise whenever he has a chance he spends all his time fighting, and would soon kill every dog about the place if he were allowed to go about unrestrained. He is the only representative of the criminal classes here, and is the terror of the *Windward* people.

December 17th, Monday.—I set Petersen to work to make the elkskin finisko smaller, as they are all too large. Skin stockings inside fur boots are too warm for *walking* in unless the temperature is very low, but they are useful for sleeping in when sledging. We took our usual walks. I sewed up a rent in the roof of No. 4 hut, torn by a flying fragment of wood during the high gale. A very cool job it was too in a gale of wind with the thermometer at thirty-two degrees below zero, especially as I could only use thin worsted gloves when using a needle and twine, and in the darkness it was a very tiresome one. I was afraid, however, of the wind getting fairly inside and carrying the whole hut away, so dare not postpone the operation. I had to run backwards and forwards into the hut frequently to thaw out my frozen fingers and warm them up before I could go on with my work.

Our dogs are a great source of amusement. I let loose from the dog-house three or four every other day, and the ones previously let go on the preceding day are tied up in their places. Thus all the dogs get a days' liberty frequently.

In addition to the dogs periodically free there are the three pups, the nine months' old dog "Yugor," which I bought at the Yugor Straits to give to Mrs. Harmsworth, and my bear-dog, which are always loose and frequently in the house around the stove. I dare not let loose all the dogs at once, for when in numbers they have a very unpleasant habit of fixing on one unfortunate dog and murdering it. They killed one before I could get the dog-house built, and "Carlo" bagged one on his own account. They have been very well up to the present and free from disease. They do well on the Spratt's biscuit, which they have had almost exclusively for three months, but I shall give them a change to bear's-meat soon — when I have enough for ourselves and them too. The four ponies are exercised every day when the weather is not too bad. They look very well, and their coats are now very thick and long.

Weather: From 2 to 6 A.M. calm. At 8 A.M. gentle N.E. by N. wind. From 3 till midnight light winds from N., N.N.E., and N.W. Fine clear weather throughout. At 4 A.M. band (arches) of auroral light across heavens N.N.E. through zenith S.S.W.

At 8 P.M. a few auroral streamers in N. and N.W. At 2 P.M. auroral serpentine-shaped band E. through zenith to W. At 4 P.M. E. to S.W. at altitude 10° .

Throughout day, since 2 A.M., constant auroral bands and streamers E. to S.W. and W. Bands similar to that of 4 P.M. At midnight a similar display to that of 16th at midnight.

December 18th, Tuesday.—We took our usual walks, and did various odd jobs about the place. The moon is fast declining. It has been of little service to us this time, owing to the overcast weather. It has been im-

possible to take observations with the theodolite for our exact latitude and longitude, since the observatory was fixed up, owing to the gales and overcast weather. Armitage and I tried to-day during a break in the clouds, but before we had completed levelling the instrument it became entirely overcast again.

I have asked Armitage to instruct Fisher in the use of the sextant and compass, and I am taking the doctor in hand. I have given him a few lessons in the use of the sextant and artificial horizon, utilising a candle to do duty for the sun or a star. It answers very well indeed.

Weather: Midnight to noon moderate to strong and gentle N.W. winds. From noon to midnight light airs to moderate winds from S.W., N.W., W.N.W., N., and N.N.E. Gusty in earlier part of day. Fine but cloudy weather generally. Misty at times.

December 19th, Wednesday.—A calm clear day for a change. We moved the sacks of oats from the inside of the dog-house on to the roof, as the dogs were pulling them about. After lunch Armitage and I took observations of Arcturus and Mars with the theodolite for time. This was a very troublesome operation and a cold one, for in a temperature of thirty odd below zero the scales become very difficult to read, owing to their becoming iced over, and nothing will work smoothly, due to the unequal expansion and contraction of the various metal parts. The oil of the theodolite lamp froze, and of course would not burn. However, we got fair results in spite of it all, but observing under these conditions is not a joy. We shall take an observation of the Pole star for position to-morrow, as it crosses the meridian about 10 A.M., if the weather will allow us. The moon is waning fast. It has been of little use this time, owing to cloudy skies.

There is an indescribable charm about moonlight Arctic night when the weather is fine. The great dark dome of the heavens seems so far, far away. The stars

OUR HUTS BY MOONLIGHT IN WINTER

seem to twinkle with a clearness that pierces everything. There is a stillness, too—a great wonderful silence that impresses one. The aurora, with its ever-changing shape and colour, is a constant feast for our eyes,

affording a never-failing source of speculation as to its cause. As one wanders alone over the rugged ice-floes thoughts are apt to turn towards home, thousands of miles away, where life is going on under such different auspices; to wonder how dear friends are and what they are doing; to the dear old mother, left perhaps in bad health. Is she still alive? Shall I ever see her again? are thoughts which chase each other through one's brain.

Suddenly one realises that giving way to sadness does no good, and determinedly shuts such thoughts out of one's head, but one thinks instead of discoveries to be made, problems solved, and great things to be accomplished.

Weather: At 2 A.M. gentle N.N.E. wind. At 4 A.M. light E. airs. Then to 8 P.M. calm. At 10 P.M. light E. airs. At midnight calm. Fine clear weather throughout. Loud rushing and whistling sounds caused by ice pressure, much resembling wind rushing through leaves, were heard throughout the day. Aurora all day in bands and streamers chiefly to E. to W., culminating at 8 P.M. in a brilliant display from E. to W., being of spiral, fanlike, and circular shapes. Thick, circular masses in W. extreme, sending out streamers with lateral movements to N. with a fringe of prismatic colouring which again closed up into bands and moved laterally to S. and disappeared, appearing to rise as it did so.

December 20th, Thursday.—Blowing stiffly from the E.N.E. and north-east, increasing in strength as the day advanced, with driving snow. This is a fiendish place for wind!

The following is Fisher's report on the flora of Franz Josef Land on our arrival:

"On Cape Barents, on the 9th of September, 1894. no phanerogams were to be seen except a solitary stunted grass, which was much too imperfect to identify. It seems to have been frozen before flowering. Umbilicaria and a few other small lichens, "red" and "green" snow, and a few mosses, composing the flora of the spot.

The rocks here face all quarters, hence there must be no lack of sunlight in summer, but it is doubtless a wind-swept locality.

"*Cape Flora*.—On the 8th of September we arrived here, just in time to see the last flower of *Papaver nudicaule*, which was much battered by cold wind, two petals only being attached. Height of plant four inches. Fully developed capsules were abundant on Cape Flora. The solitary flower was growing with one plant of *Cochlearia* on the stone wall of Eira Cottage on the south side. This scurvy grass was in flower and fruit. It seemed to be less affected by frost than the poppy.

"*Saxifraga ceroma* had finished flowering and was stunted and discoloured by frost.

"*Alopecurus alpinus*, sm., an abundant grass, was in full flower; another grass, probably *Poa Alpina*, L., was too far gone to be of any use. *Saxifraga oppositifolia* had no fruit-stalks attached, so that it is impossible to say whether it had flowered this year or not. However, as the flowers appear in May and June, sufficient time had elapsed for the total disappearance of the fruit-stalks, considering the force of the wind here.

"*Stellaria Sp.* was barren. There are about as many lichens and mosses here as flowering plants. These plants are all growing on a bank at the foot of the talus. The bank is flat-topped and elevated, about fifty feet above the sea. It is on the southern side of the rugged cliff, which rises to about six hundred feet (approx.). This cliff affords little shelter from any wind. There are no sheltered spots in this part of Franz Josef land, so that the flora of this bank may be taken as a sample of that of Southern Franz Josef Land.

"From what we know of the flora of this part of the world, it is almost certain that the winter of 1894 came

on much earlier than usual. Nevertheless, it was evident that some amount of fairly good weather had favoured the plants during the short summer. The cold weather of September continued up to the time of writing, so that no further opportunities for investigating the vegetation (as far as phanerogams at least) occurred."

"December 15th, 1894."

We took our usual walks and did odd jobs.

Weather: At 2 A.M. light E.N.E. breeze, shifting to E. at 4 A.M., and gradually increasing to strong breeze at noon. At 8 P.M. E.N.E. at 9 A.M. moderate gale. At midnight strong E. gale. Fine clear weather till 4 P.M., from then till midnight overcast. One hour's fine snow and four hours' thick snow, and driving hard from 2 P.M.

December 21st, Friday.—Last night at 7 P.M. we had some fried bear's liver again after it had been soaked in boiling water, served with a joint of bear. At 12.30 to-night during my watch a severe headache (both frontal and at the crown of the head) came on with a feeling of nausea. This continued until 3 A.M., when my watch ended and I turned in, and, with the exception of some headache, I had recovered at 9 A.M., when I turned out. I had about three ounces of liver. The doctor, Armitage, Maxim, the Russian, Child, and Fisher are more or less similarly affected. Armitage had recovered by breakfast-time. Child vomited twice, and did not feel well again until this evening. The doctor has been very unwell all day, likewise has Maxim. Fisher, who ate only a very little liver, soon recovered. We are all of us quite satisfied now as to bear's liver being poisonous—under certain conditions, at all events. It is probably due to some alkaloid in it, or to the action of the juices of the stomach upon some substance in the bear's liver, which then becomes poisonous. We were all of us affected from five to six and a half hours after

eating it. The doctor cannot account for it in any way. He has taken particulars of each person's case, and I have desired him to preserve some of the liver in spirit for analysis in London; also I have told him to try a little on one of the dogs, but Kane in his book says it does not affect dogs.*

We are now half-way through the Arctic night, and no one so far looks much the worse for this constant darkness, monotonous to the last degree as it is. We are all as cheery and jolly as crickets, and everything has gone very smoothly and as pleasantly.

It is blowing a gale, with driving, hard, cutting snow as usual, now from the north-west, and hardly a day passes without our congratulating ourselves on having a good hut in such an utterly fiendish climate as the winter in this spot proves to be. It is impossible to have regular hours for exercise owing to the weather, but I turn out all hands whenever feasible.

December 22nd, Saturday.—The doctor is still a little seedy from the bear's liver; every one else is now all right.

The members of my party have been occupied in removing furs from No. 3 to No. 1 hut. The snow drives into these store-huts badly, and it is impossible to stop it entirely. It is a much pleasanter day, and a clear sky. The southern sky has rather a lighter appearance near the horizon at noon, but no perceptible light proceeds

* Professor Vaughan Harley, of University College, London, who kindly examined for me the liver brought back for that purpose reports that "alcoholic, ethereal and watery extracts of liver tissue introduced by intra-peritoneal and subcutaneous injection had negative results in dogs and guinea-pigs, and a dog given watery extract by the mouth was unaffected. Two mice subcutaneously inoculated with 1 c.c. each of ethereal extract died three days afterwards, but it is difficult to say if this was not accidental. Watery and alcoholic extracts had no effect upon mice when subcutaneously injected."

from there, or affects the constant darkness which prevails.

Weather: Gentle to moderate W.N.W. wind to 7 A.M. Then light W. airs shifting to E. at 10 A.M. Calm at 4 P.M. Light W.N.W. wind at 8 P.M. N.W. at 10 P.M. Gentle E.N.E. wind at midnight. Fine and clear to 8 A.M., and from then till midnight overcast. At 8 A.M. snow falling in stellate-shaped crystals similar to those of September 29th. Ten hours' snow. Erected the anemometer (Beckley's) at 2 P.M. over the stable, nineteen feet from the ground, well clear of any obstruction (1 division on the anemometer = 500 revolutions of its cups).

December 23rd, Sunday.—Did a few odd jobs about the place. Weather is vile as usual.

December 24th, Monday.—I sent down to the ship a few things as presents for Christmas—including fifty tins of herrings, twenty tins of haddocks, twenty-eight pounds of cheese, four bottles of whisky (of one quart and a half each), five tins of cut tobacco, four large bottles of pickles, from our stores, and the carcase of a reindeer which had been saved for our Christmas dinner. I also sent some packs of cards and our bagatelle board for them to use. A few of the crew serenaded us just before midnight.

Driving snow and high wind and a low temperature make the weather a trifle unpleasant to-day. Several of my fellows got frozen faces when out.

Weather: From midnight till 8 P.M. fresh, to gentle and moderate W.N.W. wind. At 10 P.M. moderate N.W. wind. At midnight W.N.W. Fine but hazy weather throughout till 10 P.M. and then calm. Snow driving throughout.

CHAPTER V

A CHRISTMAS FESTIVAL, 1895

December 25th, Tuesday (Christmas Day).—I received a Christmas present at breakfast-time in the shape of a fictional book, "The Paradise of the North," by Lawson Johnston, and a Christmas-card from Jeaffreson. He had entrusted them to Armitage to give to me on Christmas Day. It is very nice of him. All the members of the Expedition also received cards from him, and were much appreciated by them. I received a note from the captain, saying that he feels too unwell to dine with us at the hut as invited. I went down to the ship to wish all hands a happy Christmas, and inquired if there was anything I could do to render it so.

I found all looking very happy and comfortable. The stove blazing in the forecastle shed a rosy glow over the rough benches and bunks, and the paraffin lamps hanging from the deck above lighted up the rude cabin. Some attempts had even been made at decoration—a difficult thing to effect in a land of ice and snow, where all is dead and such a thing as a green leaf does not exist—with coloured paper and weird texts of truly original composition. Poor fellows; in spite of all the privations and many discomforts incidental to their life in this desolate region, all had a cheery word to say and a word of thanks for the little we can do to make their Christmas something like a "merry" one.

When leaving, they turned out on deck and gave me

three cheers, and sang "For he's a jolly good fellow"; and their spokesman thanked me for "my kindness, and for having considered their comfort in so many ways since leaving England." It amply repaid me for any little trouble I might have given myself on their behalf.

At lunch I received a present of three photographs of the Thames at Windsor from Child, which he had carefully mounted.

We had a capital dinner at seven o'clock, roast bear and some reindeer sent up from the ship being the joints, which were washed down with two out of our three remaining bottles of a dozen of champagne we started with. We carefully reserved the last bottle for next Christmas. A bottle of sherry and a little port followed. We also tried some liqueur manufactured by Child, which has been christened "Liqueur Polaris." It is really fairly good, but considering that it is made of sixty overproof spirit, a little goes a very long way indeed.

The ship's cook has succeeded in making for us and the crew some very fair plum puddings, minus, however, most of the usually necessary ingredients. But bear, and plum pudding, more or less without the plums, made a very fine Christmas dinner. Any how, we thought so.

At dinner I proposed as the first toast "The health of Her Majesty the Queen of Great Britain, Ireland and Franz Josef Land, and may she live long enough to be proud of her possessions on or about the latitude of 90° north."

I then proposed the health of "Mr. and Mrs. Harmsworth and all our friends." The doctor drank to "Mr. Montefiore."

Armitage proposed the health of "Our Leader," and among other complimentary remarks stated that "he ('our leader') is a bad one to beat, but a good one to

follow, and if we stick to him we shall be all right." They sang "For he's a jolly good fellow," and gave me three cheers.

I replied, thanking the members of the Expedition for the way they have backed me up and assisted me in what work we have already accomplished, and told them that with such good fellows as they I feel great hopes of reaching the Pole if only the land does not fail us.

I then proposed the health of Dr. Nansen and his party, and wished him success. We thought of the many kind friends who will be giving us a thought to-day and drinking good luck to us, and wished that they could see us here safe and well, and as jolly as sand-boys, as I fear that the non-return of the *Windward* will cause much anxiety, especially if they hear of our going ashore at Kharborova. The circumstances of her departure from Archangel too did not look promising. I have no doubt that there has been the usual brigade remarking "I told you so" croaking out their raven-like expressions of opinion of ill-fate, and that "the ship has gone to the bottom."

I sent the captain some port wine and a few cigars down to the ship, as he had written me he is too unwell to come here to dinner.

We spent a very pleasant evening, and every one much enjoyed himself. We finished up the evening with songs, accompanied by the musical box, the walls echoing with "Rule Britannia," "John Peel," &c.

Weather: Moderate W.N.W. wind till 6 A.M. Then till 10 P.M. unsteady in the N., N.W., and E., varying between light airs and fresh winds. At midnight moderate N.E. wind. Fine clear weather throughout.

December 26th, Wednesday.—I received a letter from the first mate thanking me, on behalf of himself and the

ship's company, for "my kindness," &c. They all enjoyed their Christmas, I think, poor chaps.

A pleasant improvement in the weather; very little wind for a change, and a clear sky.

December 28th, Friday.—Armitage, who had come on watch at 8 A.M., awoke me at that time to tell me that the dogs were barking near the ship, and that the ship's bell was ringing. I knew it either meant a bear or else a fire on board. I hurried into some of my clothes, and he and I started off with our rifles. On the way we met Blomkvist and two other men. He explained that two bears had come to the ship, and that he and Jenkins had started for the hut with a rifle to tell me, but that one of the bears had "gone for" them close to the ship, and had chased them on board, Jenkins, through slipping, had a near shave. They then rang the bell.

On getting on board he shot the bear through the head from the deck at about four yards' distance.

I saw the bear put on board, and then Armitage and I started off back towards the hut, as the other bear had apparently cleared out. It was very dark, as there was no moon, and it was quite useless to look for him, for one could not distinguish such an object at fifty yards distant at all. We had not gone more than a hundred yards when shouts and the ringing of the ship's bell fetched us back, and we found the second bear prowling round the ship, but keeping a little way off; and we only knew he was near by the behaviour of the dogs. I lay down and acted the movements of a seal on the ice to draw him up, and immediately two of the dogs rushed barking into the darkness, and I followed them, and soon could make out "Mr. Bear" by his hissing and snarling. As soon as he spotted Armitage and me, he came at us at a good round pace.

I allowed him to come within ten yards, and then dropped him with a shot through the head, and he fell like a stone, quite dead. Both are fine he-bears in good condition, but with nothing whatever in their stomachs and intestines. These are the only bears seen since November 14th. Hunger is evidently making these chaps bolder.

A pleasant, cold, calm day but very dark.

Armitage and I took further star observations in the afternoon and evening with sextant and artificial horizon.

Weather : At 8 A.M. moderate decreasing gale. At 10 A.M. calm. At noon a light N. wind, shifting to N.W. at 2 P.M. At midnight light N.W. wind. Fine clear weather throughout. At 2 P.M. auroral streamers to N. and N.W., with a fringe of prismatic colouring. Altitude 30°. Bands across heavens from E. to W., moving laterally from N. to S. at frequent intervals during afternoon. Ice to the offing cracking and roaring loudly under the influence of tide and pressure.

December 29th, Saturday.—I set the carpenter to try to remove the green paint from the collapsible tents, as it has become as hard as a rock from the frost, and they are useless in their present condition, in spite of the maker's assertion that "his paint" would not become stiff with cold. I am very glad now that I insisted upon one being made of Willesden canvas. Petersen is reducing the elk-skin boots to more usable proportions; they will then be very serviceable. One day is as like another as two peas and there is little to chronicle.

Weather : Wind varying between gentle and moderate N.W. and W.N.W. until 6 P.M. At 8 P.M. moderate N.N.E. wind. At 10 P.M. light N. airs. At midnight fresh N. wind. Overcast and misty weather generally. Fine snow for four hours. Snow driving slightly. Aurora throughout day generally E. to W. Altitude 10° to 50°.

January 1st, 1895, Tuesday.—So dawns a new year. What will it bring forth? Shall we be all alive this time

twelve months? or will some of us have lost the numbers of our mess? Who can say? Maybe our dearest wishes will be well on the road to realisation; more likely disappointment will be our fate, which is the common end of most hopes.

This is the second New Year in succession that I have wintered in the Arctic. Last year I spent the greater part of this festive season in a snowdrift on the frozen shores of the White Sea, when returning from my Expedition through Waigatz and the Bolshaia Zemelskija Tundra country, where I had gone to explore and thoroughly test all the furs, sledges, and equipment I intended to use on the present one. I am sorry for the ship's crew, who had no wish or intention to winter here, but were caught in the ice like rats in a trap. They are getting very tired of it all, and wish themselves at home again, poor chaps!

At 1 A.M. I went for a walk, taking the dogs with me, as far as Sharpe's Rock. No moon yet, so it is quite dark, day and night, although when the sky clears there is a very faint twilight at noon for an hour or so. We shall be very thankful when this long night is over.

We cut a view to-day through the drift to the north of the observatory to put up a mark on true north, to use when observing with the magnetic instruments. We put some more of the oats in sacks upon the roof of the stable. Armitage and I at 6.30 P.M. took an observation of the Pole Star with the theodolite to get the true north.

We had quite an aldermanic dinner at 7 P.M. of bear and pudding, and passed the evening very pleasantly with smokes and song. I intend to test one of the reindeer sleeping-bags to-night after my watch ends at 3 A.M.

Weather : Light W. by N. and W. winds till 10 A.M. At noon light variable airs. From 4 P.M. till midnight light to strong E. by S. wind. Fine clear weather throughout. At 2 A.M. auroral streamers extending all over heavens. Then none to 6 P.M., when one small streamer appeared in N.W. At 10 P.M. streamers W. to S.W. at altitude 10° to 70° . At midnight corona in zenith with streamers shooting out all over heavens, having rapid circular and lateral motions. Layed out our true meridian to-day.

January 2nd, Wednesday.—After my watch ended at

THE DOG KENNEL AND LOG STABLE OBSERVATORY AND THERMOMETER
SCREEN (BY MOONLIGHT)

3 A.M. I took a reindeer sleeping-bag up on to the roof of the hut to give it a trial. I wore my ordinary cloth clothes, and took my militza with me to put over the mouth of the bag. The sleeping-bags are of reindeer-skin, about 6 ft. 6 in. in length and 26 in. wide, with an aperture at one end buttoned over with hide loops and buttons, through which one gradually forces one's body to get inside; the loops are then buttoned over again, covering up the head and face. The thermometer stood

at twenty-three degrees below zero, with a gale of wind from the east ; so the weather was all I could desire, and a bit more, to give it a good test. I camped with no other cover than the single bag upon the flat roof of the hut. The position is very exposed to the wind and also out of reach of any prowling bear, who on the ground might come up and find his game literally bagged for him. The gale, combined with the low temperature, made my night's camp a very unpleasant one, especially as neuralgia for an hour and a half did not conduce to my comfort. I was half afraid, too, of being blown off the roof ; my militza-cover was carried away, as likewise was my cap, which I had stuffed into a gaping aperture in the sleeping-bag to endeavour to keep out the wind. I, however, stuck to it, but it was bitterly cold, and managed to get some sleep, and came down at 9.30 A.M., with both my hands rather badly frost-bitten in bringing down my sleeping-bag and militza under considerable difficulties in the driving snow and high gale, which was still blowing with unabated force. They have been distinctly painful all day, and I expect I shall lose the nail of one finger. I found the bag anything but satisfactory in several respects, which I must alter. The spring tides now running, crack the ice very much. A steady roar has been going on all day amongst the floes.

Weather : Moderate E. by S. gale, shifting to E. at 6 A.M., and E.S.E. at 2 P.M., decreasing to moderate wind at 10 P.M. Fine clear weather till 4 A.M., and from then till midnight overcast. Nine hours' thick snow and four hours' light snow, and snow driving hard during the greater part of the day.

January 3rd, Thursday.—I set Petersen to alter the sleeping-bag. I am quite changing its form by making it to draw tight round the neck and having a hood to cover the head ; thus keeping the warm air inside, and

the cold air out, and avoiding breathing inside the bag itself, which causes so much moisture. I shall try this form of bag as soon as it is finished.

I went down to the ship and saw the captain, and told him to obtain from the cook an exact statement as to the amount of sugar and flour remaining on board, and he sent up a letter in the afternoon giving me these particulars. I am sending supplies of flour and sugar down to-morrow.

Armitage and I took observations with the Dip Circle to obtain the magnetic meridian.

Walruses were heard in the distance to the south of the ship to-night.

January 5th, Saturday.—A break in the cloudy sky occurred about 2 P.M. for an hour or two; we took advantage of it to do a little ski-running down the steep slope up which we dragged our stores last autumn, now drifted up into a less precipitous incline. The top of the slope is about fifty feet above sea level, and the floe lies at the foot of it.

The sky clouded over again about 5 P.M., with falling snow and a rising wind from the east, which put an end to our sport.

The ceiling of the hut, especially over my cabin, is dripping with water owing to the rise of temperature, I think snow must have driven into the space between the ceiling and the roof.

The needle of the Dip Circle showed a disturbance passing over about 5.30 P.M. I find that to keep the ship in sugar till the end of July will take nearly half our sugar, or 630 lbs.

January 6th, Sunday.—I put it to the vote as to whether prayers should be read on Sundays or not, as some dislike had been shown in reference to it. All but

one expressed indifference on the subject, but as one man wished it I directed that they should be read as before in the future.

As the weather has been fine, with sky clear most of the day, we all went ski-running down the slope again.

Armitage and I took observations of Mars and Arc-turus for longitude.

I set Fisher to test our tinned tomatoes for lead. The Jeannette Expedition suffered from lead-poisoning through solder having been allowed to fall into the tins when being fastened up. Ours are American tinned tomatoes, too, and may be contaminated in a similar manner.

January 7th, Monday.—My cabin is again dripping with water from the ceiling. I had some of the boards taken off the roof, and found the space between it and the roof filled with snow, which had driven in through a small space of about three-quarters of an inch in length left between the wall and the roof, and the heat of the hut is slowly melting it when the temperature rises outside. I had five hands up from the ship to assist in caulking and clearing the snow out. Most of the Expedition were engaged all day in clearing away some huge snowdrifts which have formed against the hut inside the barriers, one reaching to the roof on the south-west side, up which the dogs were able to reach our larder of bear's meat on the top.

January 8th, Tuesday.—All the Expedition did some ski-running down the slopes ; but the wind has hardened the snow very much. During the morning they were engaged in cutting through and clearing away snow drifts near the hut. In separating "Sam" and "Jinnie" (two Samoyad dogs) who were fighting, I got my left

hand bitten in three places, and it is a little painful, and uncomfortable to use for any heavy work.

There is a good deal of open water towards Bell Island and Cape Grant, and also to the south-west and south about five miles from the ship, in those directions and two miles off towards Bell Island.

Weather: At 2 A.M. gentle N.E. wind. Light S.E. airs at 4 A.M., N.E. at 6 A.M., increasing to moderate breeze at 8 A.M., and shifting through N.E. and N. to N.N.W. Gentle breeze at noon from N.N.W. Light W. wind at 4 P.M., backing to gentle N.N.W. wind at 8 P.M. till midnight.

At noon observed an orange glow on southern horizon. Cloudless sky between 5 A.M. and 2 P.M. Overcast between 3 P.M. and 7 P.M., and then fine but cloudy weather. Three and a half hours' snow.

January 9th, Wednesday. — A beautiful moonlight day without much wind. A bear was seen by Smith (the second Engineer) from the ship at about 5 P.M. near the berg at the point. He shouted to me as I had walked towards the ship, being attracted by the barking of the dogs. I ran back for my rifle and one of my men and I started in pursuit. The bear had in the meantime disappeared, but with the aid of the dogs I got on his tracks and came up to him to find "Räwing" (one of our best bear dogs) and he having a sparring match on the top of a berg at "Bear Corner" about a mile to the south of the ship on the floe. I succeeded in finishing him with three shots from my Henry Express. It was a young he-bear fully grown. He had only a little undigested brown paper in his stomach. They are wonderful animals for eating anything. Nothing seems to go amiss with them. The paper he had of course picked up from a rubbish heap.

Armitage got out the astronomical telescope and had a look at the moon and Jupiter. I went for a walk at 10 P.M. accompanied by one of my men. We climbed the ice slope at the west point of Cape Flora for some distance.

My hand is painful and swollen from the bite of yesterday, as also are the glands under my left arm.

Weather: Gentle N. wind at 2 A.M. Fresh and moderate N.W. at 4 and 6 A.M., decreasing to calm at noon. Light variable airs at 6 P.M., S.E. at 8 P.M., increasing to a gentle wind at midnight. Cloudy, overcast weather till 6 A.M. Fine clear weather till 7 P.M. generally. Overcast and cloudy till midnight.

At 6 P.M. a circular-shaped aurora to N. and N.W. with streamers.

January 10th, Thursday.—Snowing and blowing most of the day. I mended my fur finisko with twine—rather a neat job I flatter myself—although my lady friends might quibble at my darning operations.

A dog was heard at 8 P.M. barking, (as if at a bear), up the talus from the rocks behind the hut. The talus below the cliffs is a steep stony slope of about 40° caused by the weathering and breaking down of the rocks above, it averages about 600 feet in height. Burgess and I started off with our rifles followed by all the members of the Expedition and a number of the dogs. The barking still continuing, Burgess, Heyward and I climbed the talus, which is covered with ice and snow and very steep, making our clamber a difficult and rather hazardous one, but we want more fresh meat and a bear is always worth a little trouble. At last we reached the top of the talus under the rock face, six hundred feet above the sea somewhat puffed and heated to find that the dog perched up there was yapping at nothing at all. All the other members of the party had turned back after going a short distance up. The dogs which had followed, apparently exasperated at the deception practised upon us all, at once set upon the barking canine and would have killed him but for our intervention. I cannot imagine what took the dog up to such an inaccessible point to bark a solo by himself! I am inclined to think he went up and was afraid to

attempt to come down in the darkness as it looks very much like a pit below one when looking down.

It took us over an hour to climb up and longer to come down, and was pretty tough work. We had to use the butt-ends of our rifles to knock steps in the ice-slopes a great part of the way to get any foothold. I have christened the dog the "Joker" from the practical joke he played us.

Weather: Gentle to strong and light E.S.E. winds till 8 p.m. Light N.E. and N. by W. winds till midnight. Overcast throughout. Misty from noon till 10 p.m. Nine and a half hours' snow.

January 11th, Friday.—A rise in temperature to 25° F. Three of us did some ski-ing down the steep slopes by "Dead Dog Gully," where "Carlo" killed a dog, on to the floe. The snow was, however, very sticky and bad going. Snowing all the time.

Weather: Light airs and winds from W. and W.S.W. till 10 a.m. Then light to gentle S.W. breeze to 6 p.m. At 8 p.m. moderate W. wind. At 10 p.m. gentle N.W. by N. breeze. At midnight moderate N. wind. Overcast and misty weather almost throughout. Eight and a half hours' snow. I shifted the wind thermometers to the anemometer pole.

January 12th, Saturday.—Colder again, it being 15° below zero this morning. I have again lent the crew our bagatelle board. Their life must be rather monotonous poor fellows. They fetched one of our large casks to pickle the bear skins in.

A dog was found at 8 p.m. lying near the observatory at his last gasp. I picked him up and carried him into the house, where he died on being brought in, in spite of injections of whisky and artificial respiration being tried upon him. On examining him an eruption was found on his body, and he had lost a good deal of hair from the abdomen suggesting mange, but nothing to show any cause of death, unless the loss of hair exposing him to the cold accounts for it. We buried him in the ice

bank on the edge of the cliffs. I hope he died of nothing contagious. I shall carefully watch the other dogs.

January 13th, Sunday.—I went for a walk on the floe this morning as far as "Bear Corner," and again at 10 P.M., about a mile and a half to the south-west past that point. There is evidently less wind off shore as the snow lies thicker and less hard out there. There has been much pressure about a mile and a half from the ship, hummocks being piled up ten or fifteen feet high. The position of the *Windward* is out of the force of the tide-way, and current, and removed from the running pack.

I took with Armitage observations of the Pole Star for true north, making it as before, and also of Mars for latitude, he makes our latitude to be $79^{\circ} 57' 30''$ N. or nearly as on previous occasions.

All of us were again weighed this evening. Our weights being much as when weighed three weeks ago. I have increased by three pounds and another man by one and a half pounds. This now makes my weight 13 stone 7 lbs. I set the doctor and Maxim to carefully examine all the dogs for any skin or other disease. They found only one dog "Mickie" slightly affected by rash on the abdomen which is evidently a little irritable, and the hair is coming off a little around it. The dog is quite well in all other respects. The doctor is making some sulphur ointment for it, and will give the dog some sulphur internally.

January 14th, Monday.—Snowing and blowing hard most of the day with towards night a temperature of 23° F. below zero. A very unpleasant day, and very dark in spite of the fact that we are supposed to have a moon now. I took a walk about noon, but owing to the darkness it was difficult to avoid tumbling about so had one or two nasty spills over hummocks. Two others and I were engaged

in the afternoon in removing some drifts around the house. This is an extraordinarily changeable climate here with its great fluctuations of temperature.

Weather: At 2 A.M. fresh E. wind, increasing to fresh gale at 4 A.M., decreasing between 6 and 8 P.M. to moderate E. by S. wind. Light airs from E.S.E. at noon. At 1.15 P.M. shifted to N.E., and rapidly rose to a moderate gale. At 4 and 6 P.M. fresh and strong N. wind. At 8 P.M. strong N.N.W. wind, increasing and veering to fresh N.E. gale at midnight. At 2 A.M. cloudless but misty. At 4 A.M. till midnight overcast misty weather, frequently squally between 4 P.M. and midnight. Seventeen hours' fine powdery snow. Four hours' thick snow. Gusts during gale of force 7 to 10.

January 15th Tuesday.—Went down to the ship at 1 P.M. The skipper tells me that he is again nearly out of oil and that he has no oatmeal.

The members of the Expedition engaged in clearing away snow drifts around the house.

January 16th, Wednesday.—I sent the skipper some oatmeal and oil. The returning sun now makes perceptible difference to the light for an hour or two about noon if the sky is clear.

Clearing away snow drifts for exercise. Nothing very exciting—darkness, cold, monotony, that is our usual day's round. The same yesterday, to-day, and to-morrow. Such is an Arctic winter.

January 17th, Thursday.—After my watch at 2 A.M. I took the altered sleeping bag on to the roof to try it by sleeping in it there, the advantage of the roof being the freedom from bears and exposure to the weather. The temperature at 31° below zero but no wind. This time I had not to hold on, but lay in comparative comfort, and slept, or would have slept, but for outward disturbances.

A bear was evidently prowling around which was shown by the behaviour of the dogs, but although I

several times rolled out of my furry bag and walked to the top of the cliffs overlooking the floe I could not see him. At 6 A.M. I came down and got my rifle and searched for him on the floe, for, by the way, the dogs rushed out upon the plateau, barking violently, I felt sure he had come within sixty or seventy yards of the hut. I could not find him however, as it was too dark to see more than a few yards ahead.

In the evening I gave the doctor a lesson in the use of the sextant and artificial horizon. Armitage and I took observations of Mars and Arcturus with the theodolite at 2 P.M., and got out the astronomical telescope to view and time the eclipse of one of Jupiter's satellities at 4.30 P.M., but a mist prevented this.

Weather: Moderate wind to gale between N.W. and W.N.W. with furious gusts of force 6 to 9 throughout the day. From midnight to 10 A.M. misty all round near the surface of the earth. Fine and clear though cloudy at times overhead.

January 18th, Friday.—The temperature again down to 31° below zero and a stiff breeze, increasing as the day advanced. Took a walk out to "Bear Corner" in the morning. While at lunch Sunding came up to say that a bear had been seen close to the ship a few minutes before he left there. Armitage and I started off with our rifles and some of the dogs, and after casting about for some time managed to get the dogs on to the track of the bear, which was making off towards the open water to the south of the ship. After a long chase in the darkness of over two miles, I succeeded in coming up with him and killed him with one shot from my double Express rifle. Armitage joined me, having got behind in the chase, and I sent him back to the ship to bring up a sledge party and sledge, I staying by the bear to avoid the very good chance otherwise of losing the spot in the dark, owing

to the distance from the ship. I took a seat on a hummock for a few minutes, feeling rather blown and warm after my chase, but soon the cold made itself felt, the bitter wind and driving snow blew through my clothes and I was soon glad to march rapidly up and down to keep from freezing. In the distance the roar of ice pressure thundered out in the darkness, and around was a near dim white circle of ice blocks which was every now and

A BEAR-HUNT IN THE POLAR NIGHT

then quite obliterated by a violent gust of wind carrying with it a cloud of fine powdery snow. Occasionally I blew my whistle and "coo-oo-ee-ed"—an Australian bush call—to aid Armitage in finding me. And so the time passed on. After a long wait he led them back to the spot having marked his course by the stars. We had a very heavy pull over the rough hummocky ice in the darkness and in the teeth of a gale of wind, driving snow before it, and a temperature of 31° F. below zero. Most of us got more or less frost-bitten about the face or hands ; and two

of the men have large blisters on their wrists. I had the party up at the hut afterwards and entertained them at tea. The wind to-day much increased in force as we approached Cape Flora, the snow at a distance from the land being comparatively soft, and indicating that there has been much less wind seaward.

Weather: Light to gentle N.W. wind to 6 A.M. At 8 A.M. gentle to moderate N.E. wind, increasing to moderate wind at noon, and strong breeze at 4 P.M., veering to N.N.E. at 8 P.M. Moderate N.E. by N. gale at 10 P.M., and the same from N.E. at midnight. Fine clear weather generally. Cloudy and misty at times. At 8 A.M. auroral streamers in E. and S.W. at from 50° to 70° altitude. At noon indistinct corona in zenith with streamers radiating all round heavens, evidently very distant. At 4 P.M. auroral band across heavens E. through zenith to W. with a number of brilliant fan-shaped streamers to N.W. and W., coloured at edges rose and green. At 6 P.M. a band from E. through S. to W. At 8 P.M. similar bands, altitude 5° to 20° . Midnight streamers in E., E.N.E., and W.

January 19th, Saturday.—Went for a walk on the floe past "Bear Corner." A moderate gale was blowing at the hut and ship but decreased to a light breeze as I got away from the shore, and on my return I walked into it again as I approached the land.

The sun is rapidly returning now, giving quite a moderately light twilight for an hour or two about noon.

Weather: At 2 A.M. strong N.E. wind, veering to N.E. by N. at 8 A.M. and light N. by E. wind at 10 A.M. At noon N.E. At 2 P.M. variable winds. From 4 to 10 P.M. moderate to fresh N.E. wind. At midnight gentle E.N.E. wind. Fine clear weather throughout. At 2 A.M. two small streamers in zenith. At 4 A.M. a regular band across zenith N.E. to S.W. At 6 A.M. corona with streamers radiating from it around heavens. At noon two small streamers in N.W. At 2 P.M. sinuous auroral band E. to W. At 8 P.M. auroral band E. through S. to W. at altitude 5° to 15° . At 9.15 P.M. corona in zenith streamers around heavens, moving round and disappearing at 9.25 P.M. At 10 P.M. auroral bands and streamers in N. and N.W. At midnight band at N.E., altitude 6° .

January 20th, Sunday.—"William" came up as we were finishing breakfast to say that a bear was near the ship. I started Armitage and Burgess off with rifles and

dogs in chase. As it was my turn for a bath that morning, I was at that moment engaged in taking it. However, I followed as soon as I could tumble into my clothes. Armitage succeeded in killing it on the top of a berg, where it was sparring with the dogs, to the west of the ship. It proved to be a very large he-bear. I turned out the crew and we sledged it to the ship.

Armitage and I went for a walk about 12.30 P.M. past Bear Corner. Tried to-day in the Government .303 rifle some rifleite and Government cordite cartridges which I had kept all through the winter under the thermometer screen, and which had been subjected to a temperature as low as 38° below zero. Found on firing that they are quite undamaged. The rifle, now that only paraffin and not oil is used on the bolt, acts perfectly and does not clog as before. Early in the autumn with the striker oiled in a temperature of about zero, the oil froze and the striker stuck, with the result that the gun would not go off, an awkward predicament with a rowdy bear.

Weather : Calm till 6 P.M., then light airs and winds till midnight from E.S.E. Fine clear weather throughout.

At 2 A.M. band from E.N.E. over zenith to W.S.W. At 1 A.M. corona in zenith with streamers radiating around heavens, especially in S. and E. At 4 P.M. brilliant pale green thick auroral band from E. to W., waved in outline. At 6 P.M. five bands across sky from E. through zenith to W. coming to a common focus at each point. At 8 P.M. two bands E. through S. to W. altitude 10° . At midnight a few cumulus like patches N.W. and S.W..

January 21st, Monday.—East and south-east winds to-day without an immediate rise of temperature or snow as usually experienced. Evidently the open water to the east and south-east has frozen over during the recent comparatively calm weather. I noticed to-day how readily red absorbs heat by means of rays of light. The frost has not formed on the red portion of the pattern on

the felt covering the walls near the door, but has thickly on the surrounding grey, leaving the red quite bare. The ice off the land is very noisy to-day, having been shrieking and roaring continuously. It is evidently in considerable motion.

The mate came up from the ship for shovels and a pick to remove the snow, ice, and rubbish from the port side as I had pointed out to the skipper that this must be done, or there will be trouble in getting the ship free in the summer. It is a day or two since the neap tides.

Weather: At 2 A.M. light S.E. wind. At 4 A.M. gentle E.S.E. wind decreasing to light breeze at 8 A.M. and veering at midnight to E. by S. Fine clear weather till noon, and from then till midnight misty.

At 2 A.M. a similar aurora to that of midnight of 20th. At 4 A.M. the same in E. and S.E. At 8 A.M. corona in zenith with streamers radiating from it between W. (through N.) to E. At 4 P.M. and band from E. (through S.). Altitude 40° . At 10 P.M. faint but numerous arches all over the heavens, chiefly E. to W. and intercrossing.

January 22nd, Tuesday.—The sun will rise again for the first time this year one month to-day (February 22nd). We count the days like a schoolboy does the hours to his holidays. For the sun means better health, better temper, better spirits, and this monotonous existence will, at all events improve, and we can start our march northwards. Even the hour or two of dawn-like twilight which we now have at midday has an exhilarating and cheering effect on every one, which lasts throughout the day. I now turn every one out at midday for a walk of three or four miles, as midday and midnight are no longer exactly alike.

January 23rd, Wednesday.—To-day I went for a walk about 12.30 P.M. with the dogs on the floe. When about one and a half miles to the west of the ship I came across a bear and put the dogs on to him, and started off for the

hut to get my rifle. The ship people heard the barking of the dogs as the bear made for the shore, and rang the ship's bell, not knowing that I was already on the floe. Met Armitage and Dunsford with rifles on my way. The bear made for the land and mounted the talus below the rocks of Cape Flora. After a long run I clambered up the steep slope and got within fifty yards of him, but he then made off along the top under the rocks towards the west, and as the light was very dim I was afraid of hitting a dog, so abstained from firing, but hoped to get nearer to him. He, however, cleared out towards the ice-slopes, and I never saw him again, for after descending the talus with as much speed as possible, I heard the barking of the dogs away over the distant glacier. This I ascended for about three quarters of its altitude, but the sound of the dogs had died away by the time I had reached this point. All the rest of the party had returned to the hut. The light on the glacier with a mist was so bad that the ice immediately under one's feet could not be distinguished, and hollows and rises had one uniform appearance owing to all absence of shadow, rendering falls innumerable. A stiff wind had got up preventing the hearing of any barking. I stopped and blew my whistle to try and recall the dogs. Two only returned ("Beauty" and "Jinnie") although I waited for half an hour, blowing continuously. It was quite useless trying to look for them owing to the mist and darkness and the uncertainty as to the direction in which they had gone, and clambering about on the glacier under these conditions was a little dangerous. After my return to the hut, having had something to eat, I started west again accompanied by Fisher and the doctor, and blew our whistles to try and recover our four dogs ("Räwing," "Nimrod," "Sammie" and "Sallie"). At 11 P.M. to-night they have

not returned, so I have organized five search parties to look for them to-morrow if they have not come back. Am anxious about them.

Weather : Light variable airs and calm throughout. Cloudy and misty at times. At 10 P.M. a few cloud-like and serpentine-shaped auroral patches and bands in zenith and W.S.W. moving to eastward.

January 24th Thursday.—Sent out five search parties to look for the missing dogs in different directions, each with rifles and whistles. It is a beautiful calm day with a clear sky and a temperature below zero and lighter at midday than it has yet been at all. The stars shone brightly at noon with a little aurora.

Having started off these parties, Armitage and I took our line across the floes in the direction of Cape Grant, but were stopped by an open stream of water about three miles and a half to the west of the ship. We then proceeded up the channel between Bell and Mabel Islands and Cape Flora, firing shots and blowing our whistles frequently, and finally returned along the foot of the glacier upon which the dogs were last seen. On getting back we found all the parties had returned unsuccessful. It was quite dark by 2 P.M. again.

January 25th, Friday.—Blowing a gale with a temperature of twenty-six degrees below zero. Too severe to send out search parties. It is bad weather for our poor dogs, but the wind being from the north, if they should have strayed in that direction, it may induce them to come south, owing to an inclination all animals have in severe weather to turn and move with their backs to the wind. Started off just before noon for the glacier which I ascended for some distance, but could find no trace of the dogs. The wind with the low temperature (it must have been lower than thirty below zero on the glacier), was very trying, the wind whistled through my

THE BEAR-DOGS "RAWING" AND "NIMROD"

clothes and froze part of the inside of my right thigh so that I had to stop to rub it. It conveyed a sensation somewhat resembling a hot coal. The whistle which I carried in my breeches pocket stuck to my lips and burnt them, and it took me fully a minute to release it, leaving a blister behind. Later on in the day when the wind had fallen a little I went east on my search, but it all ended fruitlessly.

Shall send out search parties to-morrow if the weather is not too severe, leaving at 10 A.M. so as to secure all the twilight given to us.

January 26th, Saturday.—Sent out two search parties to endeavour to find our dogs, and Armitage and I formed a third by going round the point of Cape Flora up Miers Channel and back through Windy Gully. The two parties left at 10 A.M. with a slight breeze blowing and a temperature 29° below zero, carrying lanterns, as I thought the light might attract the dogs' attention if any were in view. Armitage and I, after going a short distance found the wind which was from the north rapidly increase in force until it blew a fresh gale, and as we rounded the point it blew directly in our faces, making an advance very difficult and trying indeed. We proceeded by walking forwards for fifty yards, when we turned our backs to the wind for a minute, and then went on again. We had no furs on, but our faces were covered up with the exception of our eyes. The fine, hard snow driven off the glaciers before the wind did not increase the comfort of our march, but cut our eyes like shot. We struck up Miers Channel for some distance until we came well within sight of Windward Island, to try and hit off the tracks of the bear and dogs. We then crossed over on to the glacier on the north side of Windy Gully, where some distance up we came across them,

tending downwards in the direction of Windward Island. The snow, however, was so hard that they could only be followed a very short distance, but doubtless they have gone up Miers Channel directly north. We then turned back towards the hut through Windy Gully, where the wind blew an absolute blizzard with a temperature of forty below zero. We fairly ran for our lives, feeling that something serious would happen if we did not get to shelter soon, for the bitter wind fairly whistled through us. I got the outside of my right thigh and the inside of my left frost-bitten through my clothes, making walking a difficulty, also my hands and the small portion of my face round my eyes left exposed were frozen, and my half-chronometer watch in my waistcoat pocket stopped for two hours—no doubt from the cold, which is always liable to cause it. Armitage was similarly inconvenienced, but was not frost-bitten quite as sharply as I was. On returning to the hut at 2 P.M. we found that the other two parties had returned after going only a short distance. I was very glad they did go on, or something serious might have happened. I feel as if I had been badly kicked by a horse, both thighs to-night were frost bitten, and have a bruised sensation in them. Am afraid our dogs are done for in this fiendish weather with no food, but I don't despair of them yet returning, for on Nares' Expedition dogs were away for much longer periods, but in less severe weather.

There is a lot of open water leading from Bates Channel round to the east of Mabel and Bell Islands and joining with the open water, which is nearly constant between this point and Cape Grant, when a northerly or north-easterly wind is blowing.

Weather: Calm till noon. At 2 P.M. light N. airs. At 4 P.M. E. airs. At 6 P.M. light E.S.E. wind. At 6.30 P.M. moderate to fresh N.E. gale

continuing till midnight. Misty at 8 A.M. otherwise clear weather throughout.

January 27th, Sunday.—A fine clear day, but with a high wind, and a temperature of 27° F. below zero. I had an anchor light brought up from the ship and fixed on the roof of the house to attract the dog's attention if anywhere within view of it. The returning sun will soon overcome the light of the stars at noon on the southern horizon. It caused them to look dim at mid-day to-day.

Frost-smoke is visible near Bell and Mabel Islands. It looks as if dense clouds of smoke were rising from the open cracks in the ice. It is due to the comparatively warm vapour given off from the open water and condensing upon the very cold atmosphere above.

January 28th, Monday.—At 6 A.M. I was awakened to be told the news that the dogs had returned, and I turned out of my blankets to give them a welcome. All had done so except "Nimrod." The other three are thin and very hungry, but otherwise all right, and quite brisk and strong. The vitality of these dogs is wonderful. Whether "Nimrod" has been killed by the bear or eaten by his companions I cannot say. I am, however, keeping the lamp on the roof still burning, to attract his attention, if he should still be in the land of the living, as I think it very possibly brought the others back. I took my usual walk with the dogs again at midday to look for a bear. Dogs and bears keep us pretty busy one way and another. Saw some recent bear tracks beyond Bear Corner.

Weather: At 2 A.M. gentle N.E. wind, increasing to fresh breeze at 4 A.M. decreasing to light breeze at 6 A.M., and veering to W. at 10 A.M. At noon moderate N.E. wind, at midnight light E. airs. Fine, clear weather throughout. Wind very unsteady both in direction and force.

January 29th, Tuesday.—After great labour we dug a hole eighteen inches to two feet deep in the earth, which is like rock, to enable me to insert a thermometer to record the temperature of the ground near the surface. Having placed the thermometer in the ground we filled the hole in again.

A fine snow falling at midnight, with an apparently perfectly cloudless sky. No wind, and a temperature of 23° F. below zero. I beat the boundaries beyond the line of bergs in search of a bear with the dogs, as usual at noon, for we want more meat. There is now sufficient light to enable us to walk fast over the floe without stumbling. Altered the sleeping-bag again, and I shall try it as soon as I get a thoroughly suitable bad night, which we shan't have long to wait for. The altered elk-skin boots, which are my own invention, are voted very good by every one. They are more comfortable to walk in over uneven surfaces, and are warmer than the reindeer-skin "finsko," but are heavier, stronger, and more durable.

January 30th, Wednesday.—Went for my usual bear-hunting walk with the dogs at midday. The floes near the ship are swept clean of snow in many places, at others the snow lies at varying depths, but is very hard and cut into deep furrows and ridges by the wind. Most of the sastrugi run from east to west. The floes are much cracked, the cracks varying from four inches to two feet six inches in width and filled with soft snow.

Tested the spirit-stove devised by myself, by melting snow outside the house in it, and find it works admirably. The moon now is back in its first quarter. The aluminium pans appear to stand fire well. I directed our cook to use one for heating condensed milk, &c. in, some

weeks ago, and it now appears quite unaffected. We are now making preparations for spring sledging. Our winter's dark existence is drawing to a close, and we can begin to look forward once again.

Weather: Calm till 8 A.M. then light E. airs at 10 A.M. Variable at noon and 2 P.M. light airs and winds from E.S.E. At 4 P.M. moderate wind from E. increasing to fresh gale and veering to E. by S. at midnight. Fine, clear weather generally. Misty at times. At 4 A.M. brilliant steamers at altitude of 80° extending to horizon of pale yellowish green colour, from N.E. to S.W. darting like flames.

February 1st, Friday.—We have been engaged in chopping up bear's meat very small, mixing spice and dry mustard with it, and then stirring with boiling lard. It is then put out on the roof to freeze. This, I think, will make splendid fresh-meat pemmican for sledging, and very easily fried, or eaten raw if more convenient.

"Carlo" flew at Maxim to-day, knocking him off the pony while exercising it in a most unprovoked manner, and then bit the pony in the fetlock. Coming on the scene immediately afterwards I gave him a thrashing, when he flew at me, so I caught him and gave him a second one to endeavour to teach him manners. I fear he will die of lead poisoning yet, as he is very savage and the terror of Maxim, who has to feed and attend to him, and, so far as I can see, quite useless for anything. Poor old chap, the winter and the conditions of life here have not improved his temper. I sympathise with him.

February 2nd, Saturday.—Owing to the moon and the returning daylight there is now a good deal of light at noon. We walked to-day south-west from the ship to the edge of the open water about two miles off the ship. It (the open water) is about four miles across, apparently, but may be wider. It extends to the horizon to the west beyond Cape Grant, and north past the entrance to Eira Harbour. To the east and south it then extends to

the horizon. It is only in parts skimmed with bay ice of a few hours duration.

A remarkably high barometer, 30.784, at midnight (uncorrected to sea level). The correction would make it higher still.

Weather: At 2 A.M. calm. At 4 p.m. light S.W. wind. At 6 a.m. light N.N.W. wind. At 8 A.M. light N.E. airs and winds. At 10 A.M. E.N.E. At noon moderate N.E. wind. At 2 P.M. N.N.W. At 4 P.M. N.E. At 6 P.M. light W. by N. wind. At 8 P.M. light N. airs. At midnight calm. Cloudy and overcast generally till noon, with a little snow at 2 A.M. After noon fine, clear weather. At 2 A.M. auroral band in zenith disappearing behind clouds. Similar aurora at edge of clouds at 4 A.M. At 6 A.M. faint band across zenith. At 6 P.M. bands and streamers through S. from E. to W. altitude 10° to 40° . At 8 P.M. a similar aurora.

CHAPTER VI

MOTHER BEAR'S NURSERY

February 3rd, 1895, Sunday.—The marine barometer is just over thirty-one inches (corrected). Took a walk directly south of the ship to the edge of the ice, about three miles off, and from there could see no ice to the south, although refraction in that direction was very considerable, showing a large extent of open water. Found the tracks of a half-grown cub, followed by those of two dogs, on my way back to the hut about 2 P.M. On my return I was told by Child and the carpenter, who had just run back from Cape Gertrude (four miles off), where they had walked with Crowther to look for a reported spar with a band of iron on it, that "Räwing" had found a bear in a hole there. I jumped on the black pony and rode across the floe, with my rifle, to Cape Gertrude in the twilight, where I found "Räwing" still barking at the entrance to the bear's lair. She had, I could see by the tracks, rushed outside after the dog; but was now back in the hole. As she flounced out at "Räwing" and nearly caught him I shot her through the head, and she fell backwards into the hole quite dead. The lair was situated on the steep sloping edge of the plateau at the front of the rocks, where it runs down to the frozen sea below. It was deeply covered with a hard compact snow-drift, the thickness of the snow above the lair being about four feet. The lair had evidently been there for a very considerable period.

The opinion I have formed after three years spent in Franz Josef Land is that Polar bears do not, strictly speaking, hibernate at all; but that only the females lay up for a very considerable time to bring forth their young. There were little fæces in the lair. On listening at the entrance I could hear other sounds beyond the dead bear, no doubt proceeding from a cub; but as the sledge which I had ordered to follow me from Cape Flora was long in coming up, and as it required a better light than there now was—it was after three o'clock—to take the cub alive, which I am anxious to do, I covered the dead bear and the entrance to the lair up with snow to check the freezing of the carcase, and decided to leave further proceedings till to-morrow morning. The only aperture originally to the lair was a small hole, about three inches in diameter, bridged over in the middle with hard snow—this, of course, before “Räwing” disturbed the bear, when she thrust her head through, making it much larger. “Räwing” proceeded to dig a hole behind her with most consummate impudence, with the evident intention of unearthing her, which afterwards she made use of to come out; but originally the only communication with the outside air was the one small breathing hole.

Received a letter from the captain to the effect that all the flour on board has now been served out, and that the sugar I sent will all be used on Wednesday week. Our own stores will soon run short at this rate.

Weather: At 2 A.M. calm. At 4 A.M. light N.W. airs. From 6 A.M. to 10 A.M. calm. At 10 A.M. light E.S.E. airs. From noon till 10 P.M. light to gentle E.S.E. winds. At midnight light S.E. winds. Fine clear weather throughout. Unusually clear till 10 P.M., until noon no clouds were visible except long lines of low clouds just above the horizon to S.S.W. S.E. made visible by the reflected light of the sun, more coming in view as the sun got near the horizon at noon. At 2 A.M. arch of aurora E.N.E. to W.S.W. altitude 10° in centre. At 4 A.M. slight patch in S.E. At 10.5 P.M. auroral

streamers fan shaped arising from band at altitude 15° to 40° from E. through S. to W. Straw coloured. At 10.15 P.M. streamers collected together in groups and gathered into circular masses.

February 4th, Monday.—At 10 A.M. we started off for Cape Gertrude with two ponies and a sledge, accompanied by all the members of the Expedition and some of the crew, to bring back the she-bear I shot yesterday and the cub which I had heard in the hole.

Not knowing the size of the cub, I had made a noose with a rope to slip over its head after digging it out, anticipating a repetition of a struggle I had in East Greenland in 1887 in taking alive a full-grown bear, only less severe in character. This I had lying ready, and as the last few shovelfuls of snow were being removed expectancy was at its height. Great was the amusement when a white, soft, fluffy thing, hardly larger than a big cat, appeared, and instead of a desperate struggle with a savage beast, it was quietly transferred to my arms, where it nestled contentedly as if they had always been its cradle, and was then wrapped up warmly and placed on the sledge to be driven back to the hut.

It was a fine, clear, still morning, with a good deal of twilight, and the temperature some degrees below zero. To the south rosy colours showed the whereabouts of the sun below the horizon, and the promise of the return of it in three weeks exhilarates us all. Fisher and I took measurements and particulars of the lair, and I requested him to make a sketch of it. It was in a snow bank on side of a raised beach about eighty feet above the floe, facing S.S.W.

Particulars of Mother.—A she-bear fairly well nourished, but having only about half an inch of blubber under the skin. There was, however, a considerable

amount of sub-peritoneal fat, as well as fat in the anterior mediastinum.

Weight, 393 lbs. (very light indeed for even a she-bear). Length, 6 ft. 6 in. from end of nose to tip of tail. Girth, 4 ft. 9 in. round the chest. Girth, 4 ft. 9 in. round abdomen. From nose end to line between the ears, 15 in. Between base of the ears, 11 in. Length of fore-leg from top of shoulder to end of claw, 2 ft. 9 in. From elbow to claw end, $10\frac{1}{2}$ in. From heel to claw end, 15 in. Thumb and little finger claws (exserted), $2\frac{3}{8}$ in. Middle claw (exserted), $3\frac{1}{8}$ in. Circumference of head just in front of ears, 2 ft. 3 in.

Nearly forty-eight hours after death, when examined, decomposition had to a great extent set in; and all the organs, as well as the fat and blubber, especially in anterior and under parts, were deeply stained both by post-mortem congestion and the exceedingly dark condition of the blood, some of the veins, &c., having the appearance of actually being pigmented with black pigment. Nothing was found in the stomach or small intestines, but in the large intestines was found a considerable quantity of fæces, consisting of granular matter, bile pigment, hairs like those of her cub and her own skin; and in the rectum some bodies like white blood corpuscles, as well as numerous globules of oil. The liver was intensely dark coloured and congested, especially on the upper surface, where also it was friable, breaking down freely before the fingers. The spleen was slightly enlarged, and the uterus had evidently quite recently been occupied, it being also extremely congested, with the lochial discharge still exuding from the vagina. The bladder was empty. The body had the appearance of being in a more or less septic condition, and putrefaction had set in remarkably quickly.

To Dr. Koettlitz I am indebted for these particulars, who examined the body at my request.

Particulars of Cub.—Weight, 17 lbs. Length from nose end to tip of tail, 26 in. Girth round chest, $16\frac{1}{2}$ in. Girth round belly, $19\frac{1}{4}$ in. Distance between base of ears, $4\frac{1}{2}$ in. Length of fore-leg from top of shoulder to end of middle claw, $10\frac{1}{2}$ in. Length of fore-paw, $3\frac{1}{2}$ in. Length of hind-foot, $4\frac{1}{2}$ in. Length of middle claw (exserted), $\frac{3}{4}$ in. Length of thumb claw (exserted), $\frac{1}{8}$ in. Neck circumference, 11 in. Head length from nose to occipital protuberance, 7 in. Circumference of head in front of ears, 13 in. Nose length, $1\frac{1}{4}$ in. Eyes open and pupils respond to light. Body hairs $1\frac{3}{4}$ to 2 in. long, very white and even.

Dentition.—Canines upper and lower both through.

Length, $\frac{1}{4}$ in. upper ; $\frac{1}{8}$ in. lower. Incisors. Lateral upper through. Middle of upper and all lower were just below the mucous membrane on the point of coming through.

Particulars of Lair.—Total length, 15 ft. 10 in. Width at end below breathing aperture, 6 ft. 4 in. Width at middle of hole (waist), 3 ft. Depth at breathing hole end and at waist, $1\frac{1}{2}$ ft. Width at base (end away from breathing hole), $1\frac{3}{4}$ yards. Depth at base, $2\frac{1}{2}$ ft.

The roof of the lair was claw-marked (striated), and quite free from the feathery icicles which hung from the roof of the breathing aperture, and from the end beneath the shaft going up to the breathing hole to the waist of the hole for $7\frac{1}{2}$ ft. Icicles on roof at the above portion of the lair about $2\frac{1}{2}$ to 3 in. long, and $\frac{1}{2}$ to $\frac{5}{8}$ in. in diameter. There was three and a half feet to four feet of snow from the roof to the surface of the drift.

Washed my clothes during my watch from 10 P.M. till 2 A.M., which is an operation carried out under con-

siderable difficulties in this part of the world, owing to the trouble in obtaining water; and it is small wonder that our clothes soon began to look very yellow. We were all weighed again to-night. All much as before.

Weather : Light S.E. airs and winds to 4 A.M. At 6 A.M. light S.E. airs. At 8 A.M. W. airs. At 10 A.M. and noon calm; light airs from W. by N. W.N.W. till 4 P.M. and then till midnight light N.W. airs and winds. Overcast, cloudy weather throughout. Atmosphere clear near the earth, great quantities of circo-cumulus roll cumulus clouds, and in the early morning.

February 5th, Tuesday.—When out with the dogs on my usual sport-seeking (or shall I call it food-searching) walk, I came upon a walrus making blow-holes in the thin bay ice between the thicker bay ice and the floe pieces that have come in and now cover the western portion of the recent open water in that direction. He was lying on his back beneath the ice, and hammering and scraping at a small hole he had made, and, gradually enlarging it, I walked up close to him and could have taken hold of one tusk which projected through.

The marine barometer now registers 31.25 (uncorrected for sea-level), and the aneroid in the house has now risen over one-tenth past the thirty-one inches (past the scale), so that neither can be read exactly. This being so unusually high, I have had both photographed lest doubt should be thrown on these readings. A bear came to the ship at 8 P.M., but was scared by Sunding. One of my men and I went in pursuit, but failed to find any trace of him. "John" came up at eleven o'clock to say that the dogs were barking to S.S.W. of the ship some distance off. I went about two miles away in that direction, and found the dog "Sammy" in great trouble. He had apparently got on the wrong side of an open crack with water in it, and was afraid to cross it. He no doubt had been returning from chasing

the bear seen earlier in the evening. My presence seemed to give him confidence, for he jumped over on my calling to him.

Weather : At 2 A.M. light N.W. wind. At 4 A.M. gentle N. by E. wind. At 6 A.M. gentle N.N.E. wind. At 10 A.M. moderate E.N.E. wind. At noon light N. by E. winds. Light airs and winds from E. by S. at 2 p.m. Calm till 10 P.M. At midnight light N.N.W. wind. Overcast and cloudy weather until 11 A.M. Fine clear weather until 4 P.M. Especially clear and cloudless until midnight. All the barometers, except George's, too high to read. Barometers began to fall about midnight.

Aurora.—At 6.20 P.M. a brilliant auroral display. Commenced by rising in E.N.E. and moving slowly through S. to W. Pale yellowish green colour. At 8.30 P.M. it shot across heavens at altitude of 80° to N.E. in about five seconds. Colouring prismatic, rose, green, and yellow, recurring in another band through N. across to W. at altitude of 60° , then it lost its prismatic colouring and became straw coloured or yellowish-green. At 6.34 P.M. band from W. to N.E. moved like shooting flames, laterally and swiftly without losing its formation or shape. At 6.37 P.M. band W. to N.E. moved with a rapid serpentine movement. At 6.40 p.m. band W. to N.E. appeared to rise up into space and moved to zenith in S., and losing all colour becoming like white smoke or soft, white filmy ethereal clouds. At 10 P.M. auroral sub-corona in zenith with streamers to N.E. through E. and S. to W. A few patches at 40° altitude to E.

February 6th, Wednesday.—Another rise in temperature, and snow. A north-westerly wind blowing. Had previously been cold from this quarter. The reason of a north-west wind causing a rise of the thermometer now is not easy to understand, unless there is open water to north-west of Gillis Land, and even then the wind has to cross a glaciated country to reach here, which would relieve it, one would expect, of all moisture, but might produce a fohn wind. Can there be only a small amount of land in that direction? I hope not.

Our infant bear to-day was photographed by magnesium flash-light in the hut. Much open water to the westward and eastward of Bell Island. Crowther says there was none of this open water at this time in 1882. The frost bites on my thighs are still very troublesome; are

dark and swollen, and very hard and knotty, suggesting a large bruise in appearance. The doctor has prescribed a lotion of belladonna and goulard water to apply, as he thinks that it may develop into an ulcer owing to the stoppage of the veinous circulation in it. One place is about three-quarters the size of my hand; the other smaller. These bites occurred on January 26th, when searching for the lost dogs.

Weather : At 2 A.M. light N. by W. wind. At 4 A.M. gentle N.W. wind. At 8 A.M. light W.N.W. wind. At 10 A.M. gentle W.N.W. wind. At noon light W.N.W. wind, then till midnight N.W. wind, varying between light airs and gentle winds. Fine, clear weather till 4 A.M. It then clouded over and became overcast for the remainder of the day. At 8 A.M. cirrus clouds moved rapidly from N.W. Five hours snow. At 6 P.M. double halo round moon. The inner halo being nearly of the same as the moon, with a border of brown yellow. The second or outer halo of a deep green colour, with a border of reddish yellow. The moon itself appeared misty.

February 7th, Thursday.—I received the following report from the doctor in reference to the only dog that has died or suffered from illness since we had them, except, of course, those that have been killed by the others of the pack.

"ELMWOOD, CAPE FLORA, FRANZ JOSEF LAND,
February 6th, 1895."

"F. G. Jackson, Esq.,

"Sir,

"As a dog which died on January 12th last has been the only case of illness among the dogs which has occurred since leaving Kharborova, I take the opportunity of reporting upon the probable cause of his death. Ever since the dog came under observation he was noticed to be an ill-conditioned cur, keeping himself aloof from his fellows, and of a skulking disposition. He was a particularly filthy feeder, preferring garbage to food given to him.

"After the kennel was erected he was shut up in it.

These beastly habits in all probability caused a skin disease, which consisted of rose-coloured spots (not many) and loss of hair about his abdomen and under parts, also to some extent on his legs, so that he was more exposed to the cold than he would otherwise have been. On the day in question (January 12th) he was found to have broken out of his kennel, and was lying on the cleared space near the observatory in an epileptic form of convulsion, with tetanic spasm, on the point of death, for he died within a minute or two, the probable cause of which was the exposure his condition subjected him to. Not knowing whether his disease was infectious, and to avoid contaminating his companions, we buried him deep in the snow and away from where they would be likely to find him. I examined the other dogs later, and am glad to say that none of them seem to have any disease upon them.

“ I have the honour to be, your obedient servant,

“ REGINALD KOETTLITZ, M.R.C.S. Lond., &c.

CHAPTER VII

A TOUGH BIT FOR "MR. BEAR"

February 7th, Thursday.—At 2 A.M. as I was coming off my watch, I heard dogs barking at a distance to the west-south-west of the ship. Took my .303 rifle and started off, expecting that a bear was the cause of the commotion. The snowy and misty weather made walking over the rough floe very tiresome work, and caused frequent falls. After going about two and a half miles to the edge of the open water (now covered with a skim of bay ice), I found the dogs barking at a walrus lying on an ice spit surrounded by thin bay ice. As it was quite impossible to take him in such a position by such a light, being quite dark and misty, I called the dogs off and got back to the hut at 4 A.M. At 5 A.M., just as I was on the point of turning into my blankets, I heard the dogs again barking, so I hurriedly put a coat and a pair of breeches over my pyjamas, and slipping on a pair of "finsko" boots, started off again with my rifle, going in the same direction as I had earlier in the morning. The light was very bad, owing to snow and mist in addition to the ordinary darkness of night. After stumbling about two and a half miles to the west-south-west, guided by the barking, I came upon a bear close to the open water, with the dogs yelping around him, and he roaring and making dashes at them. Going up to within ten yards of him, I wounded him badly in the lower portion of the neck, but

unfortunately not sufficiently to stop him. He reluctantly took to the water, but as it had a thickness of an inch of bay ice upon it, and consequently difficult to swim through, on my hiding behind a hummock of ice he came out again further west, and started across the floe at a good pace towards Miers Channel, the dogs and I followed, giving chase ; he was bleeding considerably all the way. Every now and then he would stop to rush at one or other of the dogs, which, however, managed to dodge him. As he appeared to be distancing me and I was getting blown from running, I fired a shot at about sixty yards distance. Whether it hit him or not I can't say, but it had the effect of making him head back again towards the open water. As I had started out in haste with only three cartridges I had now only one left, so that on coming up with him again at the edge of the floe, I was particularly anxious to make sure of a fatal shot. I found him about thirty yards from the water which was covered with very thin ice, giving vent to suppressed roars and making rushes at the dogs as they barked around him. Wishing to make certain of him I went up to within six or seven yards of him, when he rushed at me, at first with his head low down, at which I fired, but just as I did so he threw his head up, causing the bullet to go between his forelegs, and he came on at me with a regulation menagerie roar and his mouth wide open, and in a second he was upon me. I could feel his warm breath upon my face, could see the gleam of his teeth and the shape of his long grey tongue, and the furious glare in his savage eyes. I had just time to remove the rifle from my shoulder, half dazzled as I was by its flash in the darkness, and to thrust the barrel with all my force into his open jaws, and then drew it back for another thrust. This was a trifle too much for him apparently, as he whipped short round and

took to the water, covered with thin ice as it was. My left hand, which entered his mouth up to the wrist, as shown by the teeth-marks upon it, bled a good deal, although the wounds were little more than deep scratches. I had now to reluctantly throw up the chase for the present, and started back to the hut for some more cartridges, although I would have given £10 for another cartridge then, for I could have killed him easily. By the ship I met Child, who had come on watch just as I went out, and whom my having been away for two hours had made anxious. I sent him up to the hut with my .303, to bring my double-barrelled .450 Henry rifle in its place, for I considered that as I had rather a dangerous fellow to deal with, it would be as well to have a second barrel up one's sleeve in case the first failed to kill him. I then started off back to the scene of my late hunt, followed by Child and also the mate, who had come out on deck, and who insisted that I must not go alone. I found that the dogs were still barking at him from a distance, but that he had forced his way across the practically open water through the thin bay ice, and was now on a floe on the other side, about one hundred and fifty yards off or less, giving vent to low roars, but, alas! quite out of further harm's way. There I had very reluctantly to leave him, as there was no means of approaching nearer to him. He was a good game bear, and I hope may recover from his wounds, but I fear there is no chance of that. I have the greatest possible dislike for wasting life, and an even greater one to leaving a wounded animal to die; but in this case it was quite unavoidable, although it went to my heart to do so.

On getting back to the hut at 8.30 A.M. I bathed my hand and turned into my blankets. After breakfast I found that the barrel of my .303 rifle was covered with

"EVIDENTLY CONSIDERING THAT SHE HAS QUITE REACHED PORT, AND THAT HER LITTLE
SEASHIP'S TROUBLES ARE ENDED"

blood, and on measuring it found that it must have entered the bear's jaws to the extent of twenty-three inches and have considerably damaged his throat. I shall always keep this rifle, for it certainly saved my skin for me. It was a near squeak. The bear was a huge fellow—quite as large as any I have seen. I sent Child, Fisher, and the doctor at midday to take advantage of the twilight to see if it can be seen from the point where I had left him, as a west or south-west wind would drive the floe he was on against the fast ice on this side, and enable us to reach him. They, however, managed to go wrong, and Child got a ducking through stepping on to some thin bay-ice. I mean to go and look myself to-morrow, for I feel distinct respect for this gentleman, for he is a fine plucky bear, who fights his battles in the open in a very different manner to some of his inferiors of the human family who do not; but I fear that the north-west winds of this afternoon will have driven the floe away.

The bear cub is a source of great amusement. She cries exactly like a young infant, and in many ways behaves like one, but shows much vice by biting and scratching. She hisses and growls very much like her elders of that ilk, and sometimes, when going off to sleep in a contented frame of mind, makes a noise like the propeller of a small steam launch. Child has become its foster-mother, and has tried a variety of home-made teats (teats were not included amongst the Polar equipment), but it will have none of them, and its feeding resolves itself into pouring condensed milk down its throat. It is an unfeminine little animal, and its conduct generally anything but lady-like, sorry as I am to say such things of our foster-child.

I hope to send her home by the *Windward* to the "Zoo" in London.

February 8th, Friday.—Went across the floe to the open water to see if I could see anything of the bear, but I found that all the thin bay ice had gone, and the floe he was on had disappeared from where it was.

I hit upon a fortunate idea for a teat for our adopted baby, which is a small piece of sponge covered with chamois leather, and with an india-rubber tube running into it from a bottle, and a piece of glass tubing fixed in the cork, into which air can be blown to make the milk run freely. She takes this very readily, and sucks away in a most ravenous fashion, with a contented, grateful look on her face, evidently considering that now she has quite reached port, and that her little bearship's troubles are ended.

February 9th, Saturday.—I slept outside on the roof after my watch closed at 2 A.M. to try the altered sleeping-bag, the temperature being 35° to 42° below zero, and a strong breeze blowing. I found that the hood to it is not quite up to the mark yet.

The minimum thermometer in the screen registered 45° below zero to-day.

February 10th, Sunday.—After my watch ended at 2 A.M. I slept on the roof to try a reindeer-skin rug. The thermometer was at 37° below zero. I found it unsatisfactory, as it got as stiff from the cold as a sheet of galvanised iron, and I could not wrap it round me, and I spent a very chilly night in consequence.

I send all the members of the Expedition on the floe at noon for a good walk, and Armitage and I also went to-day towards the edge of the open water, pulling behind us a semi-roasted leg of a bear to act as a drag in the hopes that it may bring bears up to the hut. As we dragged it to the door on our return I remarked to Armitage: "We shall have a bear walking in at the

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door now." Next day my prognostication was almost realised.

Armitage and I took lunar observations for longitude, consisting of forty-six separate observations. The time taken to do this was one hour, sixteen minutes. The temperature at the time was 36° below zero—making handling instruments rather cool work. The oil in the lamps (half paraffin and half bear's oil) kept freezing and gave us much trouble. It is not an unmixed joy taking astronomical observations in these latitudes during the winter. The instruments get frosted over with our breath, dimming the scales so as to render them all but unreadable, which by the dim light of a lamp are never too distinct. The cold becomes more and more penetrating, and we leave off for a few moments to stamp up and down and swing our arms to coax back the blood to our frozen feet and fingers. We have to work in mitts, too, which render difficult the manipulation of the fine screws and adjustments. People hear of observations being taken in the Arctic, but little realise the conditions under which those observations are frequently taken.

Weather: Light N.E. airs and winds till 10 A.M. At noon a gentle E wind. At 2 P.M. calm. At 4 P.M. a light E.N.E. wind, and from then till midnight calm. Fine, clear weather throughout. At 8 P.M. auroral arches from E.N.E. to W.S.W. of varying altitude to 60° arched toward zenith. At 10 P.M. corona in zenith with streamers radiating from it around heavens, and bands near horizon at S., S.E., and S.W.

February 11th, Monday.—A bear came up to within a couple of yards of the door at noon to-day, just after all the members of the Expedition (except Armitage, Burgess and I, who were just starting) had gone out on the usual walk. Burgess was on the point of leaving the hut when he saw him just outside the door, and just had time to slam it. I went out with my '450 double rifle and in a second had put a bullet into him.

We found him on the top of the snow bank about eight yards from the house on the south-west side. He fell, and lay there for half a minute nearly, when he staggered to his feet and made off, followed by the dogs, which had been absent somewhere until after I fired. I called to Armitage, who had now joined me, to put a solid Government .303 bullet into him, as I wished the effect tried. (The effect was *nil* so far as stopping him went; but I afterwards found that the bullet only passed through the flesh of the right thigh and out again.) As he went over the fresh-water pond I gave him one in the left flank, ripping it up and fracturing the left shoulder, but still on he went, bleeding profusely, and scrambled down the steep icy slope towards the floe; he and the dogs getting mixed up into a confused heap on the way down (a lucky thing for the dogs he could not bite—my first shot, I found, prevented this by breaking his jaw). On their separating out a little, I put two more bullets into him and finished him. He was a moderate-sized he-bear weighing 750 lbs.; length along belly, 7 ft. 9 in.; along back, 7 ft. 5 in.; girth of chest, 6 ft. 1 in.; round neck, 43 in.; width between the ears, 1 ft. 2 in.

Polar bears appear almost insensible to shock, and have evidently a low nervous organism, to stop them it is necessary to hit some spot, such as the brain or vertebræ, that will absolutely put their locomotive machinery out of gear, otherwise they go away smiling. The first bullet entered two inches below the left eye, fracturing considerably the left side of the lower jaw, driving small fragments of it into the throat, two of which were found in the stomach. It then passed backwards and inwards through the root of the tongue, fracturing the hyoid bone, carrying away the left half of the epiglottis, and then travelled backwards and downwards

BEAR DOGS AND BEAR

into the larynx, fracturing the cartilage and several rings of cartilage of the trachea, making a large jagged wound in it ; then it ploughed through the muscles in front of the bodies of the cervical vertebræ, and a piece of the bullet was found embedded in the muscles of the fifth vertebra. He also lost a large quantity of blood, some of which ran down into the lungs. And yet, after he had recovered from the stunning effect of the blow on the angle of the jaw, was going gaily off ! In the neck at the base of the skull is the best place to shoot a bear if you have the chance of putting it in at this spot ; through the brain is safe enough, but it makes a smash of the skull. The drag we laid yesterday apparently brought him up. We are very glad of the meat. Armitage and I took out another to-day when out for exercise. We saw several walruses in the open cracks in the bay ice.

Photographed the infant bear (by flash-light) to-day, having its bottle, and also while playing with its toes afterwards, much like a human baby. We found on weighing it to-day that it has lost $3\frac{1}{2}$ lbs. since its arrival. This is hardly surprising considering its change of milk and its semi-starving condition until a suitable teat could be devised. A dog in the kennels died suddenly to-day. It was quite well at 1 P.M. and ate two and three-quarter dog biscuits after that time, but was frozen stiff at 3 P.M. There is no apparent cause of death, but I have requested the doctor to make a *post-mortem* examination of him. I am very particular indeed about having all water boiled before being used for food or drink, as some of the dogs have tapeworms. I also have all tinned food carefully examined before being used. These points I consider to be of the very highest importance.

February 14th, Thursday.—I was called at 8 A.M. to hear that a bear was near the ship as the bell was ringing.

A minute or two afterwards Blomkvist came up with a rifle to report it to me. I put a coat and breeches over my pyjamas and Armitage and I started off with our rifles. We found the bear on the south side of the confused pile of floe-bergs and ice-bergs at the point. He and I then separated, he staying on the west side and I going round to the south-east so as to cut off his retreat. The bear on seeing me, crossed the floe-bergs, and passing within twenty yards of Armitage, received a shot in the neck as he went by, but without stopping him, I followed up with another at a long range which missed. The bear bleeding a good deal made for the stony point to the north-west of the ship about three quarters of a mile off, followed by the dogs. Armitage who had a good three minutes start of me came up with him there among the large boulders and killed him, I catching them up half a minute later. It was blowing a stiff breeze from the north with hard driving snow and not enough light to see one's rifle-sights. The wind, snow, and a temperature of 15° below zero made running to windward very blowing work.

February 15th, Friday.—I experimented with some Government cordite and also some rifleite .303 cartridges to-day, which had been exposed under the thermometer screen all the winter to the cold. The temperature at the time of firing was 25° F. below zero. I used the Government rifle, sent for me to experiment with, at twenty yards distance. The target being a one inch plank, then a sack of oats five feet in circumference and thirty inches high, then a pine board three and a half inches thick, and then another similar sack of oats with another one inch pine board behind it. I found all the regulation bullets passed through the one inch board and sack of oats, and lodged in the three and a half inch pine board about one inch from the surface in a broadside-on posi-

tion, only one passed through it and penetrated the second sack of oats. All the nickel bullets turned broad-side-on after entering the first sack of oats. I also at the same time tried some of the regulation cartridges which had been in the hut all winter, and could detect no difference in either the firing or the penetration, or in any other respect between these and the ones exposed to the weather. The bullets were quite unaltered after entering the target, the only marks upon them when recovered being those of the rifling of the gun. I found the bolt of the gun pull back stiffly, owing to the cold. The sight protector also is difficult to remove after exposure to cold. The striker, now that oil has ceased to be used on it, acts very well, and the rifle now never missfires as it did when in cold weather when the striking mechanism had been oiled. The greatest cold these cartridges had been subjected to is fifty-four below zero. I am sending a report to the War Office as requested by them.*

Some of the Expedition when walking on the floe came upon a bear about half a mile off the ship, and although they had a rifle with them they at once ran back to tell me, like the good fellows they are. One man and I started off with the dogs, followed by the members who had seen it, but although we searched for three hours, hunting the floe edge by the open water from west to east, we could not meet him. I think he must have taken to the water. We saw several walruses at the floe edge.

At the ship they are working up an idea of mine for improving the pony's snow-shoes—the Norwegian

* I have since sent a written report on my experiments with the rifle and ammunition to the War Office, which I am pleased to hear from the officials there have had valuable results.

ones appear to me very primitive affairs, and will not stay on.

The doctor held a post-mortem on the dog that died a day or two ago, and I have told him to send me in a written report upon it. He found tape-worms in the intestine, and I have asked him to examine and experiment with the eggs of them, with a view to ascertain what degree of cold, if any, destroys them. We have been very careful indeed all along in having all water thoroughly boiled before being used, to avoid the risk of contracting hydatids from this cause, as it was evident that many of the dogs have worms. This dog probably died of convulsions caused by them.

February 16th, Saturday.—Blowing a fresh gale with a temperature of thirty-two below zero from east-by-south and east-south-east—distinctly cool. There is evidently no open water down that way now. The fine snow from the glacier is driving in the wind. I sent the members of the Expedition out at noon as usual, but with their "militzas" on. Two or three returned at lunch time with their faces touched up a bit with frost-bites. Armitage and I went out for a walk also. I brought Heyward back, who unable to control his delight at having a rifle all to himself had started off alone, picturing to himself slaying a bear all on his own account. He had walked over the floe with his back to the wind as far as he thought time would allow, and then had all the way back to come against it. Seeing him at a distance in evident distress and unable to make headway, I bore down upon him and brought him up. He had got both cheeks considerably frost-bitten and looked very pretty indeed. It has however, taught him a lesson that weather like that of to-day is to be respected, and is not a huge joke as he had evidently imagined it to be.

February 18th, Monday.—We find on weighing the bear cub to-day that it has gained one pound during the last week. "Sammy" and "Nimrod" turned up about 2 P.M.—they had got on the wrong side of an open lane of water, which had parted behind them, and we feared they had come to an untimely end. No open water is now to be seen from a height of fifty feet, for the first time this winter. Where open water was a day or two ago is now filled up with a mixture of bay-ice from two inches thick to floes eighteen feet thick and more, which is constantly shifting with the wind and tide. All the ice I crossed while after the dogs yesterday has entirely changed, and at some points the pressure has been tremendous. While out to-day one of my men and I had just time to cross a crack before it opened to twelve feet across while we watched it. The ice on either side of it stood three feet on the flat and much more where it passed through hummocks, above the level of the water. Piles of huge blocks of ice were heaped up to heights of twenty-five feet, and heaps of twenty feet had formed since 4 P.M. of yesterday. No ship that ever was built would stand the pressure exerted, if she got fairly in the jaws of it, and the floes would in a few minutes place her either on the top of them, if she should rise to it, or else underneath them; or go clean through her sides if they got a fair grip of her. The ice here has been squeezed against the land which very much increases the pressure. All this shifting ice has come from the east, possibly from the Kara Sea, brought in by the late easterly gale.

We have been busy taking out the double windows and removing ice (two inches thick) from between them, which was formed owing to damp air having passed between them from the room, caused both by defective

caulking when they were put in, and also through breakage of the inner windows and repairs by brown paper during the winter.

Now that we shall be having the sun back in four days we want to take full advantage of all the light we can get, for we quite appreciate light after the darkness of the Arctic night. Four months of solid night has a depressing effect not only on the spirits but on the appetite, and even during the first winter it seriously affected the sleep of more than one of the party. Morning, noon, and night become unrecognisable, merged into one endless gloom, and but for the welcome advent of the moon once a month when the sky is sufficiently clear for us to enjoy her rays we have lived in a darkness the dreariness of which is indescribable. As the school-boy counts the days to the holidays we have counted the hours till the return of the sun, and even as the first rays become visible our spirits rise, and existence altogether wears a different complexion. Now exercise becomes enjoyable and instead of the dreary daily trudge round a given circle in the darkness, with the return of the light we feel new life and energy. They say eels get used to skinning—well, we may have got fairly used to darkness, cold, wind, mist and driving snow, but we hardly like it.

February 19th, Tuesday.—Busy repairing the windows and removing the two inches of ice, which is caked over them.

Went my usual bear-hunting walk with the dogs at noon, taking my rifle now, as I find from experience that too much time is lost in returning for it after finding a bear. Could see frost-smoke arising from pools of open water to the south and S.S.E. The sky showed evidence of considerable open water to S.S.W. I could,

however, see no water (altitude 50 feet), so it is probably eight or ten miles away.

About 5 P.M. Smith, the second engineer, came up to say that the dogs were barking out on the floe just beyond Bear Corner. A man and I started off with our rifles, but could only just hear the barking of the dogs rapidly going away in the distance towards the south. We followed in the darkness across the floes until we had gone at least two miles beyond Cape Gertrude, but never could get any nearer (evidently something had badly scared the bear) until their sounds ceased entirely, and one by one, after our waiting and whistling for some time on the top of a heaped up pile of ice-blocks, about half a mile from one of the open pools of water seen in the morning, they returned. My little Samoyad bitch "Sally" was very wet, having evidently fallen into a crack. My other little bitch "Jinnie" gave birth to seven pups at noon to-day—quite a sledge team! I had fortunately installed her in a box of hay in the hut only a few hours before. She was extremely desirous of going out with me shooting as usual to-day, and looked very crest-fallen when sent back to her domestic duties. The temperature throughout the day until to-night has ranged from 40° to 46° below zero. The minimum thermometer in the screen indicated as low as 50° below zero. I, however, got quite hot in this temperature during my run after the bear. My face getting coated with ice owing to the perspiration freezing on it, and on my removing my cap to better enable me to listen for the barking of the dogs, my hair froze quite hard in about twenty seconds. It was, however, beautifully calm and clear. A local breeze coming from the gully to the west of Cape Gertrude made the cold for a time very

unpleasantly evident, plainly reminding us of the difference a little wind would make.

Weather : Light airs to gentle winds from E.S.E., E. by S., and E. to 10 A.M. Calm till 10 P.M. Light E. airs at midnight. Fine clear weather throughout. At 2 A.M. a disconnected auroral band from W.S.W. altitude 5° to zenith. At 4 A.M. bands and streamers from W. to zenith. Patches in S.E. and E. At 8 P.M. a regular arch N. to W.N.W. at altitude 60° . At 10 P.M. a broken auroral band E. to N.W. across zenith. Streamers at W. altitude 50° . At midnight band N.E. to S.E.

February 20th, Wednesday.—Armitage and I walked out on the ice with the dogs to beyond the cleft berg, nearly half way to Mabel Island—all open water has disappeared in that direction. The temperature at 45° below zero, with a breeze from the east made it rather cool when returning. The minimum spirit thermometer registered at night 51° below zero. I am hurrying on our preparations for a start north.

Weather : At 2 P.M. light N. airs. At 4 A.M. S.E. airs increasing to gentle breeze at 6 A.M., shifting and decreasing to light E. wind at 10 A.M. E.S.E. at noon. Calm from 10 P.M. till midnight. Fine clear weather throughout. At 2 A.M. a regular auroral band across zenith from E. to W. At 4 A.M. band from S.W. to N.E. Also band across sky S.E. to E. about altitude 25° . At 8 P.M. brilliant aurora, a circular base, altitude 15° with streamers shooting up to common focus bearing S. altitude 70° . Band running from base from S. to W., and streamers from it making for a common focus and formed a corona in zenith which broke up at 8.15 P.M. into numerous serpentine bands and arches all over heavens. At 10 P.M. a broken band to S.W. altitude 10° and short streamers rising from it to altitude 30° .

February 21st, Thursday.—Put up the Willesden canvas tent on the ice of the pond. It appears likely to act all right.

Armitage and I did a little revolver practice at noon, and afterwards walked some distance to the glacier leading to Shell Gully to see what our path north looks like, as that is the way by which we shall go. Found a breeze blowing there, which made the temperature of

47° below zero, felt. The mercury in all the thermometers has been frozen solid for the last few days, and the minimum spirit thermometer has registered 54° below zero at noon to-day for the last twenty-four hours. Water has opened up to the east of us in a position in which I have never seen it before all the winter. It has been calm most of the day with the exception of the local breeze from the north-east we met with on the glacier. Sounds could be heard at a considerable distance to-day, and intense cold apparently does not reduce the travelling of sound, so far as distance is concerned; it may in velocity perhaps.

When on the floe over a mile away Armitage and I could hear members of the Expedition talking in an ordinary tone when near the hut, and could distinguish what they said—a possible echo of the rocks behind them may have had something to do with this long carry of sound, as they did not hear my whistle, which I blew to test this.

Weather : At 2 A.M. calm. At 4 A.M. light E. wind and from then till 6 P.M. calm. At 8 P.M. light N.N.E. wind. At 10 P.M. a moderate N.E. wind. At midnight light N. by E. airs. Fine clear weather throughout. At 8 p.m. auroral bands from E. to S. altitude 5° to 15°.

CHAPTER VIII

DAYLIGHT RETURNS

February 22nd, 1895, Friday.—The long Arctic night came to an end to-day and the sun rose, for the first time since October 18th. The upper limb (refracted) appeared above the horizon at 10.29 A.M. and remained above for about three hours. We are mightily glad to see it back again—we can now get to work soon.

At 2 A.M. after my watch I slept out in the tent we have pitched upon the pond in my “militza,” “soviek” and “pimmies,” to test this night-rig as compared with the various modifications of the reindeer-skin bag. The temperature in the screen stood at $39\frac{1}{2}$ below zero, so it was a fair test. I found the result satisfactory, excepting that my “soviek” is too tight around the throat and nearly choked me, making me almost afraid of going to sleep for fear of this really happening in the event of my turning over.

The juvenile bear is now taking three pints of milk (half a tin per day), making fearful havoc with our supply. It is to-day, however, within half a pound of its original weight, and is much stronger than it was then. It is getting a very rowdy, truculent little beast, and when in a bad temper turns the hut into a perfect pandemonium of sound.

Weather: At 2 A.M. calm. At 4 A.M. light N. by W. wind and from then till noon light N.E. wind. At 2 P.M. calm. At 4 P.M. moderate N.E. wind. At 8 P.M. fresh N. wind. At 10 P.M. variable winds. At midnight N.W.

variable force. Misty till 4 A.M. Squally between 4 P.M. and midnight. Fine clear weather at other times. At 4 P.M. there was a sudden gust of wind from N.E. of force 4, and from then till 10 P.M. furious gusts of wind every one or two minutes between N. and E.N.E. and W.N.W., force 7 to 9, and from then till midnight between N.N.E. and W.N.W., chiefly N.W., forces 1 to 9. At midnight auroral bands and streamers in zenith E., W., and N.W.

February 23rd, Saturday.—Blowing hard with driving snow and very violent gusts which carried away all movable

THE "WINDWARD" IN HER WINTER QUARTERS

articles and blew away part of the roof of the dog-house which had withstood previous violent gales. I took mine and Armitages's "soviaks" down to the ship for Petersen to alter, having very considerable trouble in getting them there. The first time I started a violent gust blew me across the pond and separated my bundle, which I had strapped together. I managed to prevent the "soviaks" being carried off, but a reindeer-skin which

was in the bundle and the strap were blown over the cliffs and on to the floe. The strap I recovered after half-an-hour's searching, but the skin had blown to kingdom come, and is probably somewhere Cape Barents way. I brought the "sovieks" into the hut, and having got another skin, managed to get them to the ship all right. This will give some idea of the force of the wind here when it sets to work to blow. The temperature was from -20° to -25° F. below zero which made it pretty nippy. The members of the Expedition did not go for their usual walk to-day. I was out most of the day, as I dislike very much being shut up now it is light enough to get really good exercise.

February 24th, Sunday.—The gale had quite gone down by 8 A.M. this morning. We put the black pony into the sledge and Armitage and I started off about 11.45 A.M. to make a preparatory excursion north to get an idea as to what the ice is like. We crossed the glacier between Capes Flora and Gertrude, and pushed across Gunther Bay until we were nearly abreast of Windward Island where we stopped and took a round of angles with the prismatic compass and then returned by the way we had come, reaching the hut at 6.30 P.M., having travelled about twenty miles. We found the ice with hard snow upon it and level, but deeply cut into furrows and ridges by the wind. The crust on the snow was often strong enough to bear the pony, which behaved very well. It certainly looks very promising for the future usefulness of these animals. I wish I had more of them. It has been a beautifully clear day and a great contrast to yesterday. The temperature sank again to 30° below zero towards night. The gale has opened up a good deal of open water off Bell Island, and to the south-west and S.S.W. about three miles from the ship.

We were all weighed again this evening. All had gained except Armitage and I. He has lost two pounds, and I seven pounds, since February 4th. This is due with regard to him and me to the amount of violent exercise and the many hard runs we have had after bears since the returning daylight enabled us to put the pace on. Some of the others are more deliberate in their movements and consequently longer in getting rid of superfluous flesh acquired during the Strasburg goose-life of the winter. I weighed 12 st. 12 lbs. to-night, Armitage 12 st. 5 lbs.

Weather: At 2 A.M. strong decreasing N.N.E. gale. At 6 A.M. strong N.N.E. wind. At 10 A.M. light E.S.E. wind. At noon gentle S.E. wind. At 2 P.M. till midnight calm. Overcast at 2 A.M. Fine clear weather for the remainder of the day.

At 4 A.M. streamers of aurora from N.E. to zenith. At 6 P.M. faint auroral band at E. At 8 P.M. thick arched fringe E. to W. at 20° altitude in the centre. Faint streamers shooting up from it and forming apex at zenith. At 10 P.M. a semi-corona in zenith with streamers radiating from it all around heavens with exception of between N.N.W. and E.N.E.

February 25th, Monday.—Armitage and I fixed the astronomical telescope on the roof of the house to sweep the floes and to try and spot bears at a distance, for we shall be glad of more meat. The horizon, however, was rather misty owing to frost-smoke rising. I sent the other members of the party out with a dog-team hitched to the English sledge, and also with a bay pony for exercise. Armitage and I then took the bear dogs and went over the floes to the edge of the open water to look for a bear. We heard a walrus whistling in a peculiar manner, making a musical sound like a person blowing into a key. A flock of birds were seen flying over the open water. They were dovebies.

The captain came up at noon to say that Blomkvist and Manson are anxious to become members of the

Expedition party. As the former appears to be a tough hardy fellow I told the skipper to request him to write a letter of application and I will consider it. I can't take both. At 8 P.M. the dogs were reported to be barking as if at a bear, away west towards the rocky point. I started off with my rifle, Armitage following me about ten minutes afterwards, as he had to put his coat, &c., on. I followed the barking of the dogs away as far as the rocky point over the land; the sound then led me over the floe towards Bell Island for about two miles, and on to some thin bay-ice from which the bear finally took to the water and escaped, without giving either Armitage (who had come up with me by cutting across the half-circle I had pursued) or me a chance of a shot. It was a very dark night, unusually so for these latitudes, and I should have had to have got within ten yards of him to be able to make out the outlines of his body, to say nothing of his head, a thing he did not give me a chance of doing. We had a very rough, tumbling run over the hummocky floe, and we both had numberless falls. When returning an aurora appeared in the eastern sky which gave some little light, probably owing to the unusual darkness. This is the first time that I have noticed the aurora have any perceptible effect upon the light; as a rule it looks beautiful but makes no difference whatever to the gloom. The little bear has been very seedy all day. It was sick this morning, and has taken very little milk since. Something has apparently disagreed with its little stomach. The doctor has given it ten drops of chlorodyne and a tablespoonful of castor oil. The former evidently relieved the pain in its "tummie" at once. The poor little beast lay in my lap and looked a very pitiful little bear indeed before it had its dose.

Weather: Calm to 4 A.M. and from then till noon light E. airs and

winds, and from then till 10 P.M. calm. At midnight light N.N.E. wind. Fine clear weather throughout. At 2 A.M. broad faint auroral band from S.S.W. to zenith. Narrow faint band N.N.W. to zenith. At 10 p.m. thick auroral fringe E. to S.W. at altitude of 10° scintillating and moving laterally to and fro, and sent up streamers to the zenith forming an apex. Streamers seemed formed in layers with fringed base, forming into thick circular masses. At midnight streamers from N. to S.E. Altitude 70° to zenith.

February 26th, Tuesday.—Our infant the bear is much better to-day.

Went for a walk for my usual bear-search along the edge of the bay-ice at noon with the dogs. I found when trying to use my field-glasses that owing to the cold the focus adjustment would not move.

Got out two sledges to rig up preparatory to our start north. I mean to do a preliminary trip with only two men to take on some fodder and provisions in a few days.

Armitage and I took theodolite observations of stars for time and latitude this evening.

February 27th, Wednesday.—I received a letter of application from Blomkvist. Maxim, the Russian, I find on questioning him, wants to get back to Arkhangel with the ship this summer.

Child at noon photographed "Bear Corner," the scene of many a good bear-hunt both by night and day, with Armitage and me and our four bear-dogs "Räwing," "Nimrod," "Sammie," and "Sally."

Armitage and I afterwards carried out the plane-table to take a round of rays, and began to measure a base for the survey I intend to make, but the 100-foot tape broke owing to the action of the frost (29° below zero with a strong breeze) and stopped us working for the day, for which we were not altogether sorry, as it was distinctly cool work.

Rigged my sledge in the evening. I have again

had the trahometer altered. It is now almost entirely new.

Weather : At 2 A.M. light N.N.W. winds and from then till noon light N. and N.W. Calm till 6 p.m. At 8 P.M. moderate N.E. wind, and from then till midnight fresh N.N.E. wind. From 10 A.M. till 2 P.M. observed long arches of circus clouds E. to S.W. meeting at horizon at each extreme. Altitude at centre 10° coloured dull grey, stone, fleecy white and reddish tints, the lines becoming much thinner as the altitude increased. (These have been observed frequently since this date, March 28th).

At 10 p.m. short arched close auroral fringe of streamers of altitude of 15° E.S.E. to S.W.

February 28th, Thursday.—Blowing a fresh gale nearly the whole day: in the morning a whole gale. This, combined with a temperature of 25° F. below zero, made it particularly nippy. I went for a walk, taking the dogs with me, along the edge of the bay-ice, finding less wind as I got away from the land, and consequently not quite so trying.

I rigged another sledge during the day. We are all, the crew included, very busy pushing on our preparations for the sledging.

The last day of the two-hourly observations. Through the spring and summer they will be taken at 8 A.M., noon, 4 P.M., and 8 P.M. only, as we cannot now find time to continue them two-hourly night and day.

March 1st, Friday.—Blowing and the snow drifting. We could do no more surveying on account of the wind shaking or carrying away the plane table.

Armitage and I went for a walk on the floe with the dogs.

I went down to the ship to see how the various articles which are being made or altered for the sledging are progressing. I find that the painted outer canvas on two folding tents will have to be removed and soaked in soda to remove all the paint.

I saw Blomkvist and arranged to take him on as a

member of the Expedition: several of the crew are anxious to volunteer in the event of my not accepting him.

Continued our preparations for a start north.

March 2nd, Saturday.—Blomkvist came up to the hut at 11 A.M., and the doctor examined him medically and reported him to be satisfactory, handing in a written report at my request. A fresh breeze with drifting snow still stops any surveying. Turned out No. 1 hut, removing the snow and re-arranging the stores in it. Started weighing out the hay and oats with which to form a depôt north. Rigged sledges, &c.

I tried the new pony harness we have made with the black pony in the English sledge on the floe. Found it very satisfactory.

Maxim devoted quite ten minutes to first of all praising it, and then cursing his own Russian harness for being so clumsy. It was very funny!

March 3rd, Sunday.—Still blowing and drifting. We continued the preparations for a start. In the afternoon I drove the black pony in the English sledge with Armitage on the floe round the point of Cape Flora as far as Windy Gully. At 8 P.M. all the crew except the watchman came up to the hut and spent the evening in whisky, smoke, and song, giving three cheers for me on leaving at midnight. They evidently now take as keen an interest in the Expedition, and are as wishful for its success, as we are ourselves. They have one and all behaved very well through the winter, and have not given me the smallest trouble.

Weather: Moderate E.N.E. throughout. Fine, clear weather. At 10 P.M. a regular auroral arch from E. to W.S.W. Altitude 20° and streamers from circular cloud-like patch at altitude 15° to 30° at E.

Double halo round moon. Inner halo yellow with border of brownish yellow. Diameter $1^{\circ}36'$.

Outer halo of a dark green colour with a border of dark brown, $2^{\circ}36'$.

March 4th, Monday.—We have all been hard at work all day pushing on our preparations. I got one of the fodder sledges (11 ft. 6 in.) loaded (409 lbs.) and ready to start.

It has again been blowing too hard with drifting snow to go on with the survey. Armitage and I took an observation this evening of B. Tauri (which culminated with the moon) for longitude, and also observations at the meridian of the same star for latitude. We first up-ended the large Russian sledge, and lashed it to a corner of the observatory to protect the theodolite from the wind, and made a barricade around it; it was, however, observing under difficulties.

March 7th, Thursday.—I had again to alter the tent stretchers. One of my men and I cleared out the pony stable and store, and I did a variety of odd jobs. Fine, calm but misty (fine snow), with parhelia around the sun. I find that many of the cartridges supplied for my Waigatz trip won't fit properly in my .303 rifle. They, however, go into the regulation rifle.

I tried the black pony in hobbles on the floe. Shall have to tether them in addition to hobbling them, I can see, as I fear otherwise they will travel in their hobbles at night, as there will be no pasturage to keep them feeding and occupied, as in more favoured climes.

March 8th, Friday.—Armitage and I ascended Cape Flora to the top of the ice dome at the very summit. It being a beautifully clear fine day, we got a fine view for at least forty miles on sea level, and could see elevated points much further off. No definite open water visible of any extent, but about three to four miles off the ship, running east and west, a tract of mixed ice, composed of

moderately thick ice, with bay ice between it, and with open lanes of water a quarter of a mile wide reaching to

OUR SETTLEMENT, MARCH, 1895

some distance off the shore, probably ten or twenty or possibly more miles. This is caused by the current. A second tract of disturbed ice joins the current track at

right angles from the S.S.W., probably caused by the tide running in from the south.

Miers Channel appears quite free of lanes of water and the ice is very level, but a dark cloud hovering over the ice somewhere at the junction of Meirs Channel with Nightingale Sound suggests the possibility of a large polynia there. Leigh Smith is evidently a little out in his map of Northbrook Island and the eastern side of Bruce Island, but I consider his mapping excellent. All the land so far as I can see is ice-capped with dark rocks forming headlands jutting out of the ice at long intervals. The "mainland" (Alexandra Land) is all ice-capped and rises to a considerable altitude until lost in the distance. Here and there dome-shaped hills rise upon it. All is one white expanse, one large glacier, and nunataks of rock jut out of the ice only near the shore at long intervals.

We found the height of Cape Flora by aneroid to be fourteen hundred and sixty feet. The ice near the summit is much crevassed. The crevasses being bridged with snow, which we had to cross by crawling over while lying on our chests. At other parts of the ascent we met with no cracks.

I addressed the members of the Expedition to-night, remarking that they had now a little experience of the Arctic, have passed through a winter and have a good idea now what their life in the future will be like. If any of them after their insight into life in this part of the world wish to withdraw from their engagement or were not entirely contented, now was the time to say it, and they could return with the ship. In a short time it will be too late! I gave them twelve hours to thoroughly think over it, and require a written statement in reply from each member of the party.

March 9th, Saturday.—I received a letter from each member of the Expedition by 11 A.M. stating their desire to continue members of it and to remain here.

At about 1 P.M. Maxim spotted a bear on the floe at some distance from the ship. In the meantime Mr. Bear instead of coming towards it struck off to the south-west. Armitage and I started off with our rifles to try and come up with him, he going east and I west, taking the dogs with us. They soon found him a mile still further west, but he at once made off in the direction of Bell Island, and although I followed the line they had gone for four miles over the bay ice to the south-east of Bell Island I never got nearer to them, and finally the dogs and bear were lost to sight, and to hearing too. We want more meat now, and I shall be glad of a kill.

We completed our preparations and loaded up the fourth sledge to-night, and everything is in readiness for a start North to-morrow morning. The sledges are standing ready to go on the ice of the thaw-water pond near the house.

The juvenile bear to-day ate some bear's meat and licked the plate on which it was with relish. It is developing rapidly, and can now bite with very considerable effect. It seized Armitage by the thigh to-day when crossing the room and considerably hurried his movements. It clambers all over the hut and won't stay in its cask for a minute unless the head be lashed on. The coal box is its favourite playground, and is frequently more the colour of its Russian relative than its natural straw-white.

The sledging party going to-morrow were weighed to-day. I have gained seven pounds since the last time we were weighed (Feb. 24th), and Armitage three pounds (replacing fat with good muscle).

Our present weight is—K. Blomkvist, 13 st. 7 lbs. ; F. G. Jackson, 13 st. 5 lbs. ; A. B. Armitage, 12 st. 11 lbs.

The little bear has been stalking "Jinnie's" pups during her absence to-night, and got her fore-quarters into their box and proceeded to bite them, making them squeal, before it was noticed. A few minutes afterwards she endeavoured to repeat the hunt, stalking them in the most orthodox manner of her elders, and was very angry at again being interrupted.

March 10th, Sunday.—We left Cape Flora at 10.30 A.M. to establish our first northern depôt and to get an idea as to what the track North is like. Armitage and Blomkvist accompanied me. We took two ponies drawing four sledges (one 13 ft. 6 in., one 11 ft. 6 in., and two 9 ft. 6 in.). The total weights drawn by the two ponies were 1700 lbs. (720 lbs. fodder and oats (two months feed for two ponies) for depôt and 152 lbs. of provisions for three men (two weeks provisions of three and a half pounds per day).

We carried provisions and equipment for seven days for men and ponies in addition to the stores for the depôt. The sledge flags given to me by Mrs. Harmsworth and the Countess Metaxa were carried on the sledges, being taken down from the walls of my cabin the morning we left.

As we started cheers were given for us by the crew of the *Windward* and the remaining members of the Expedition. The weather is clear, fine and sunny with a light breeze and looks most promising. Every one is most enthusiastic.

CHAPTER IX

THE FIRST SLEDGE JOURNEY, 1895

March 10th, Sunday, 1895.—For a long time past we have been very busy preparing for a preliminary journey northwards. As the end of the dark time approaches all becomes hurry and bustle in our little community. The hut is crowded with all kinds of equipment and sledges brought into it to be packed, and piles of rations in the course of being weighed out fill every available foot of space.

We have been working all through the winter at these sledging preparations, upon the careful completion of which so much depends. Weight and bulk are of the greatest consideration, and it is wonderful how weights accumulate by ounces, so that the utmost care must be exercised in the selection of only the most necessary and indispensable articles, and food rationed out to the smallest amounts per day compatible with keeping men in health. An amusing tale is told of a distinguished Arctic discoverer, who was said to have been found in his cabin carefully weighing a pocket handkerchief and debating whether he should take it sledging or not! But it is only by careful attention to weights that good results can be attained, which the gentleman in question was one of the first to demonstrate.

One of my sledges I had constructed very much on the same lines as those by Admiral Sir Leopold McClintock, who most kindly lent me a model to work

by. He is practically the Father of Sledging, and his sledges were as great an advance upon those of his predecessors as the modern Lee-Metford rifle is upon the old Snider.

The majority of my sledges were 9 feet 6 inches in length by 18 inches wide, and the bed of the sledge was raised 6 inches above the flat $3\frac{1}{2}$ inch wide ski-like runners, and made of ash. These when quite dry weigh about 16 pounds. They were built in Norway. A few I had made 13 feet 6 inches in length, but I found the greater length a source of weakness, and so discarded them after the first spring. The most useful one, however, was 11 feet 6 inches in length and built of ash, weighing 23 pounds. No nails or pegs were used in any portion of these sledges, the parts being lashed together with raw hide, to give greater spring and elasticity to them. They behaved magnificently, and two went through not only the whole of my Franz Josef Land Expedition, extending over three years, but also through the journey I took in 1893 to 1894 to Waigatz and the Bolshaia Zemelskija Tundra.

When starting sledging they were loaded up with great care, a duty I always performed myself. I never put more than 340 pounds on any one sledge after the first spring, thus keeping them fairly light and less liable to break down, and also more readily handled amidst hummocky ice and deep soft snow.

My present intentions are to push north, by way of Markham and Austria Sounds, but on the first, our preliminary journey, to travel only far enough to establish our first depôt of provisions, get an idea of what the ice is like in that direction, and the requirements of it, and then return to fit out again.

We expect to find a large mass of land running to

OUR START NORTH, MARCH, 1895

the north, as shown in Payers' map of the country, along the coastline of which we can travel, and establish depôts of provisions, and which may enable us to advance a long way to the northward.

March 10th, Sunday, 1895.—Left Cape Flora at 10.40 A.M. with two ponies drawing four sledges with total weights of about 1700 pounds, including provisions for depôt, 152 pounds (fortnights' rations for five men); hay and oats for horses, 720 pounds (two months' rations for two horses.) Also food and equipment for three men and two ponies for seven days.

I drove the black pony ("Blackie") ahead of the others with two sledges. Armitage and Blomkvist followed with a bay pony and two sledges with the trahometer wheel on the rear sledge, which was an instrument I had had constructed in London for measuring distance travelled. This failed to work well owing to defective workmanship.

The crew of the *Windward* turned out and gave us parting cheers as we left. The sledges and party were photographed on leaving.

We proceeded round the point of Cape Flora and up Miers Channel. Weather fine, clear, and sunny. When north of Cape Flora we met a stiff breeze from the north, which made the cold felt. The crust on the snow is hard, but much cut by the wind and with much evaporation below the surface, causing the crust to break. Ice level, but with low hummocks.

Camped at 6.15 P.M. at Camp Point (north-west point of Northbrook Island), to which I gave this name. We tied the ponies up to a hummock of ice with halters and hobbled them. Our two dogs "Räwing" and "Beauty" we fastened up to a peg driven into the snow near the ponies. We took these dogs to give us warning in the

event of bears approaching the camp. On the ponies we fastened horse bells. We slept in our "sovieks," "militzas," and pimmies," with "tobocks" on our feet, and short skin breeches. I carried no sleeping-bags. The tent we used on this journey was made for us in England and originally weighed thirty pounds complete, but after various additions for strengthening, it became heavier. It opened and closed very much like a Chinese lantern, and although the principle of its design was excellent, it was easily and quickly pitched, and gave much space inside for its size; owing to the breakability of the ribs it gave us much trouble.

The spirit stove designed by myself proved excellent. Two large pots, a kettle, and a frying-pan fitted one inside the other, and the whole is enclosed in a cylinder-like casing, with a door and a lid on the top, in this the lamp burns. Being made of aluminium it only weighs five and a-half pounds. In the most severe gale of wind I have never known it so much as to flicker, and am entirely satisfied with it.

Of food, consisting of bear pemmican, biscuit, tea, cocoa, dried soup, cheese, and butter, I allowed three pounds per day each man.

On reaching the spot where I had decided to camp the first care was for our animals. The ponies were taken out of the sledges, their blanket coats strapped on, tied up to a hummock with halters, hobbled, and fed. The dogs were then fastened as outposts, to give us warning of the approach of bears, and given their pound of meat each. We then proceeded to pitch our tent, arrange our gear, get into our furs, our socks and mitts wet from condensed perspiration placed upon our chests to dry, as, of course, we have no fire, and cook our dinner. The culinary duties I always undertook myself. Then

followed a pipe of tobacco ; and we rolled over, glad that our day's labour was over, and fell asleep, which was sound enough unless awakened by too severe a temperature, the approach of bears, or animals breaking loose. All this is simple enough, in spite of the severe cold, if the weather be fine ; and hard frozen food and clothes as stiff from frost as galvanised iron are viewed with complacency, although, perhaps, hardly in accordance with the tastes of many. But let a gale of wind get up, with its invariable accompaniment of dense driving snow ; then pitching one's camp is not amusing. In the most suffocating blizzard nothing can be seen but a dim white circle a few yards away. The sky and earth are blotted out from view, and nothing can be heard but the rush of the wind. The tent which we have been struggling in vain to pitch for the last half-hour bangs and flaps and threatens to tear itself from our grasp, and every few minutes we have to leave off work to rub our frozen cheeks and noses, and swing our arms to get some warmth into our hands and bodies.

By patience and strenuous efforts Armitage and I at last get the tent up, with the gear and food inside, but the former we find is not quite satisfactory, as a stream of fine powdery snow drifts into it, covering everything inside with its cold mantle. Supper is cooked under difficulties in the semi-darkness, and the dense steam arising from our operations in the cold air renders sight at more than two feet distant out of the question, and the crouched position the size of the tent (which is only five feet high) necessitates causes frequent cramp in the legs. However, all unpleasant as well as pleasant things come to an end some time, and such is partially the case with us, and having demolished our supper as best we can, we lie down in our furs, having changed our socks,

moist with perspiration, and placed the wet ones on our bare chests to dry, and lie down to sleep, listening to the howling gale and the whines of the poor dogs outside, and wondering if the wind will break up the ice upon which we are encamped and drive us out to sea. The ponies have humped up their backs and turned their hind-quarters to the wind, and the dogs have tucked their noses under their tails and are nearly buried in the drift, but neither ponies nor dogs can sleep. The temperature is lower than thirty below zero, and that in a gale is cool. Man, however, has a somewhat better time of it, and oblivion removes his cares of the day.

Snowing and blowing all night. Travelled fifteen geographical miles.

March 11th, Monday.—The morning broke, revealing dense mist and heavy snow. The atmosphere is so thick that no objects are visible at a greater distance than fifteen yards.

After feeding the ponies, a good wash—or at all events as good as the circumstances of a cup of warm water would allow, was the next thing on the list. I always strip to the waist, and with a small piece of sponge and soap and a tooth-brush which I carry, managed to freshen myself up considerably. Washing is a necessary, I never on one single morning missed it during the whole time we were in Franz Joseph Land, with the solitary exception of three days in succession when we were blown off the coast in the summer of 1896, in an open boat in a gale of wind, and then we were very fully occupied in trying to keep afloat, and nearly had more washing than we desired.

I have washed in temperatures as low as forty-six below zero, stripping bare to the waist to do so, and never derived anything but good from it. True it is not

exactly a pleasant process, and it is well to hurry up or one would be frozen, and a minute towel, hard with frost, is not soothing to the face. But in my opinion the sense of cleanliness and freshness derived, if only comparative owing to the lack of water, entirely compensates for the pains and penalties involved in the process. One of my sledging companions considered that a wash once a week in his underclothing to amply meet the question, with which I have little doubt the many will coincide. I may be "faddy" on the subject, but I prefer a wash every morning and had it.

We then took our breakfast of bear pemmican, dried soup and tea. On the weather clearing somewhat to enable us to see a short distance ahead, which we had sat in the tent and eagerly looked for, we packed up our belongings and stowed them on the sledges, harnessed the ponies, and again resumed our tramp.

It has been snowing all day, with overcast, misty weather. Evidence of foxes were seen about six miles north of Northbrook Island.

Camped at 6.40 P.M.

Land in sight to north, appearing occasionally after 3 P.M. through the snow and mist. The elk-skin boots are very troublesome to get on in the morning, being frozen as hard as steel, and we have to put them inside our "militzas" for an hour before it is possible to force our feet into them. On taking them off the night before, we had placed them in such a manner as to retain the shape of the foot, otherwise after they had become frozen hard we could not have got our feet into them at all. The snow is deep, and the crust upon it insufficient to bear ponies or men, making it rather heavy travelling. The collars of our "militzas" and "soviaks" are becoming a mass of ice, cutting our necks, and making

it difficult to get our heads through, and will require altering before the next journey. There are many flat-topped bergs and low hummocks in the ice travelled over to-day. We went twelve and a quarter miles direct. I should not like to say how many we really trudged backwards and forwards to accomplish this.

March 12th, Tuesday.—Started at 10.30 A.M. in a thick fog and heavy snow, and proceeded by compass bearing of hummocks N.N.E. till 1 P.M. over very hummocky ice, when we had to stop and camp, it being impossible to see many yards ahead. We were plodding through the snow under great difficulties, being quite unable often to distinguish elevations from depressions, and near hummocks were enormously exaggerated in height and often looked like mountains. It was difficult to clearly distinguish snow beneath one's feet, and often we would find ourselves with a pony and sledge on the top of a snowdrift with a drop of three feet on the other side, over which we would step with a sudden jerk, quite failing to see the dip until over it. It was like walking blindfolded. These difficulties were caused by the total absence of shadow and by the dense mist.

It cleared slightly at 5.30 P.M. and we could distinguish land to the north-east, but were unable to estimate the distance owing to the thick weather.

Travelled four miles direct. Hardly a record performance!

March 13th, Wednesday.—Started at 10.30 A.M. over very level ice covered with snow much cut by wind. Many fair-sized flat-topped bergs to be seen. We reached the land about 2 P.M. in a small bay with a snow covered plateau cleared of snow in places by the wind, with glaciated land above it. In the centre of the bay is a basalt rock with a small glacier coming over the centre

of the face of it. To the west of this rock are a number of large boulders. We ascended the glacier above the plateau up to a thousand feet (by aneroid). The glacier still inclined upwards as far as we could ascertain; we could only see a short distance owing to the mist. We met a strong wind on the glacier with a temperature of 22° below zero, and both Armitage and I got our faces a good deal nibbled by frost. We are a little uncertain of our position, as we have been travelling in a dense fog in an unknown country, and it is now impossible to take any observations to fix this spot. The plateau is covered with boulders and loose stones and terminates westward in a spit. It is 146 feet high. We began making a depôt among the low rocks on the west of the bay. Camped on the floe at 7 P.M. Travelled six and a half miles direct.

March 14th, Thursday. — Continued making the depôt and I took a few photos of it. I mended a 13 foot 6 in. sledge which had got broken at the last moment owing to an upset. After having some food we packed our baggage, marked the depôt with two Jacks, and at 5 P.M. started off W.S.W. steering by the wind, as the fog made it impossible to see anything ahead and so take compass bearings of hummocks.

We stopped on reaching hummocks to which we could tie up the ponies, and camped for the night about 7 P.M. Travelled three and a quarter miles direct.

My journal I religiously write up daily before leaving camp, doing it in pencil which I ink in at the end of my journey. This is rather a chilly process, as bare hands of course are necessary, and the icy-cold notebook in a temperature of thirty-five to forty-five below zero is a little cooling to the hands, which every minute or so have to be thrust into the trouser pockets to avoid

frost-bite, and when the circulation has become somewhat restored the scribbling goes on again. Armitage has most perseveringly taken the readings of the thermometers and the barometer at stated intervals, which is anything but enjoyable work in bad weather. Our noses and cheeks are beginning to look very lovely; being covered with sores and scabs caused by repeated frost-bites, we look three of the most shocking ruffians

A CAMP

imaginable, and much is the fun and many the jokes caused by our appearance.

March 15th, Friday.—At 10.30 A.M. the weather had cleared up a bit, so after taking compass bearings of the principal points visible, and photos of the camp, we proceeded towards the north-west point of Northbrook Island (Camp Point). The thermometer remained at 37° below zero all day, falling to 45° below at night. Pretty cool it is too. We camped on the floe a little

to the south of Camp Point at 9 P.M. Travelled sixteen and three-quarter miles direct, but covered considerably more. Thinking that a little port wine fortified with brandy would be a useful adjunct to our sledging stores, we took some with us in a rubber bottle. This evening the idea occurred to us to indulge in a nip, but to our extreme disgust we found that owing to the intense cold, having converted the greater portion into ice we could not extract a drop. Armitage and I then took turns to sit upon this very cold egg to endeavour to thaw it out, but after nearly an hour of this hatching process we only succeeded in obtaining about a dessert-spoonful. We shall not carry it upon our next journey.

March 16th, Saturday.—The low temperature still continues and we started at 11 A.M. with a temperature at 38° F. below zero. Before leaving we took a round of bearings and proceeded down Miers Channel towards Cape Flora. We arrived at the hut at 5.15 P.M. All the crew of the *Windward* appeared on deck as we passed and gave us a cheer. Refraction has been very great throughout the day. A mirage exactly resembling open water, with the shadows of the bordering ice upon it appeared to the east of Mabel and Bell Islands. It exactly resembled water mirages I have seen in the tropics.

We arrived back with our faces very much marked with frost-bites, and the fingers of both my hands, and two fingers on one of Blomkvist's are much blistered from the same cause.

I had a good wash every morning, naked stripping, to the waist, and Armitage did the same, excepting that he kept his singlet on, in which perhaps he was wise. Blomkvist did not see the joke in it after trying one morning only. Perhaps Englishmen view washing in a different light to other people.

The statement made by some travellers is not quite correct that, when sledging, washing is impossible. We had the thermometer down at forty-five below zero, which is quite cool enough for a test as to the possibility of cleansing oneself thoroughly at low temperatures. We were much bothered with ice forming in the collars of our "sovieks" and "militzas," and the elk-skin boots were a treat every morning. They are, however, excellent for use when living in the house, but become more like iron boots when sledging. I shall use reindeer-skin ones when we start again, as they are more pliable. All our food was frozen as hard as a rock. Cheese, bacon, condensed milk, sardines, butter, etc., becoming like adamant and had to be cracked up with a tomahawk, to enable us to thaw them in a frying-pan, when they flew in chips like pieces of stone at every blow. Our furs and clothes got very stiff from the cold. We could hardly wear our woollen mitts as they contracted to such an extent as to make it difficult to force our hands into them. None of us wore goggles although we had some with us, but we did not suffer much from snow blindness. I allowed three pounds of food per day per man, and ten pounds per day per pony. It appears to be sufficient for the latter, and three pounds is quite enough for us. Armitage walks well but it tires him at present. Blomkvist is a slow walker but, I think, a sticker. Both are capital chaps.

March 16th, Saturday.—Arrived back at the hut at 5.15 P.M., having deposited our food and that of the ponies' in a dépôt made among some rocks on Hooker Island. Our trip was a fairly successful one, considering that out of five days going out and one spent at the dépôt, we had four of thick fog and snow. The weather we experienced was pretty cool, being as low as -45° F., and much

lower than the temperatures registered at Cape Flora in our absence, due no doubt to the warmth arising from the open water-lanes south of Cape Flora. We saw no indications whatever of open water north of us.

As we drew near the ship we were seen, and all the ship's company appeared on deck and gave us welcoming cheers. We heard that there had been much snow and thick weather during the week at Cape Flora, but not to the extent or as long as we had met with.

The ponies behaved splendidly, and their services will be invaluable. We travelled seventy-three miles. The doctor reports to me that Mouatt is down with scurvy. He and "John" are the only two of the crew who have exhibited such distaste for bear's or walrus's meat as to refuse to take any. They can't "abear it," they say. They have both drunk an ounce of lime-juice religiously every day. I had been expecting one or both of these men to fall with scurvy as they prefer salted meat to anything. This case is very instructive as to the cause and prevention of scurvy. I have long looked upon lime-juice as ineffectual: I think so now more than ever. I, however, insist upon the crew having it daily, and send the doctor down to see it taken by all hands, as they come under the Board of Trade regulations. I have given orders that no more salt meat is to be eaten, and have had it locked up, which causes some grumbling. I should like to throw it overboard, as I think it may be the cause of Mouatt's scurvy, but consider it better not to do so.

The little bear has fairly taken charge of the hut, and bites and scratches every one within reach. It has now a collar and chain on, and is secured to the wall of the room.

March 17th, Sunday.—We were occupied most of

the day in getting the frost out of the gear we brought back, and thawing out and removing the ice and moisture from our "soveiks," "militzas," "pimmies," mitts," &c.

Poor "Beauty," who had gone with us on our late journey to give us warning of a bear approaching the ponies, was set upon this afternoon by all the other dogs, which I had let loose for a few minutes for a run, and although he was brought into the hut and treated by the doctor, died within an hour. I gave the murderous curs a thrashing all round, which I hope may act as a deterrent in the future, and have told the doctor and Maxim to secure them with collars and long chains to the spars of timber behind the hut to-morrow. I thus hope to keep them in good health in the fresh air and sunshine, when there is any, and to prevent them killing each other. I have had all of the dogs let out of the kennel daily after the return of the sun as they were going off in condition.

March 18th, Monday.—Thawing and drying the ice out of our "militzas," "soveiks" and equipment, and making preparations for our next push north.

About 1 P.M. the carpenter came up to say that he believed the dogs were after a bear beyond "Bear Corner." Armitage and I started off with our rifles and found Smith, the second engineer, on the top of the bergs at that spot. He had seen the four dogs after a bear going fast to the south, but had lost sight of them in the distance, neither could he now hear the barking. Armitage and I, however, started off in the direction they had gone, and after running down their tracks for twenty minutes or so, we could hear the barking of the dogs and followed it up over very rough, tumbled-about ice, and eventually came within sight of Mr. Bear close to an

open lane of water through which the tide and current was running at about three miles an hour, and carrying detached blocks and crushed-up ice. The bear on our approaching entered the water and clambered on to a floating lump of ice, where Armitage put a bullet into his right shoulder. I then crept over a lane of loosely frozen and rather unsafe brash-ice and got within fifty yards of him and shot him through the neck. He fell backwards into the water unfortunately, and within a minute was quite covered over by the rapidly moving ice, so that we had no chance of getting so much as a pad, much to my regret, as we want meat. We had chased him for about three miles from the ship.

March 19th, Tuesday.—The doctor handed in his report *re* Moutt's case, of which the following is a copy.

“ELMWOOD, CAPE FLORA, FRANZ JOSEF LAND,
“ *March 15th, 1895.*

“ F. G. JACKSON, Esq.,

“ Sir,

“ I have to report that a case of scurvy has broken out on board the S.Y. *Windward* in the person of Wm. Mouatt, a seaman, who gives his age as fifty-two years. This up to the present is the only case that has come under my notice.

“ The man in question is one of the two men who have persistently refused to partake of the fresh meat, in the shape of bear's and walrus's, which is obtainable in this locality. The other man being John Webster, the boatswain, all the others having eaten it regularly. The last-named, although not attacked with scurvy, is anæmic, and not in first-class condition. All the others, which number thirty-one in all, who have passed the winter of 1894 to 1895 at Cape Flora are in good health.

“ This case has occurred notwithstanding the fact

that an ounce of lime-juice has been regularly served out under my personal superintendence every day to each man since September 23rd last.

“His symptoms are a blue hæmorrhagic patch with stiffness and pain about the left ankle, with œdema of both ankles. Loss of appetite, coated tongue, which is also large and flabby, with dental notches along the edges. Tenderness of the teeth and gums, which last are bluish, swelled, and spongy-looking. He is also markedly anæmic. He has been taking iron for the last week or more. I have ordered him to take bear’s meat every day and also soup to which bear’s blood is added. This I have every reason to hope will prove efficacious and restore him to health.

“I have the honour to be

“Your obedient servant

(Signed) “REGINALD KOETTLITZ, M.R.C.S. &c.”

We are pushing on our sledging preparations with all speed. I have Petersen up at the hut all day altering furs and doing odd jobs.

We started digging out the aluminium, copper, and Norwegian boats to-day. They are buried in deep drifts and frozen solidly down. I am having canvas chest-protectors made to go on the ponies, as the new harness has much chafed the bay pony’s shoulder.

The tents are having the paint removed and several alterations effected.

I climbed the talus about six hundred feet, to-day, by means of ice-spikes and an ice-axe, taking my breechloader to try and kill a few looms and rotges, which could be seen flying among the cliffs at the top. I killed four, but they all fell out of reach. The rotges have all cast their winter coats. I am anxious to get some birds for our scurvy patient.

March 20th, Wednesday.—Armitage and I started off with the bay mare pony and the English sledge to go over the ice to Bell Island, to try and find Leigh Smith's records there to send back home by the *Windward*. The pony at starting went very sluggishly, and I had fears of trouble to come before we got back, but having gone some way I did not wish to return, and hoped it would improve. We had a good deal of rough ice to pass over, and one perfect stone-quarry-like line of hummocks, of piled-up ice 20 ft. high by 150 ft. across, which gave us much trouble to get the pony and sledge over. On approaching Mabel Island I saw a she-bear taking a couple of small cubs out for an airing on the floe, which were trotting along behind their mother. On seeing us they beat a retreat to the ice-covered slope of Mabel Island, followed by "Sammie," the bear dog, and on coming up with them I found the she-bear making vigorous rushes at him. On my approaching within about fifty yards of her, she made a determined charge at me, but was stopped by a shot in the right side of the neck from my .303 rifle when she was thirty yards off, which made her spin round like a top, but, recovering herself, she returned to her cubs. On approaching her again she rushed at me a second time, and I gave her two more shots before she was killed. I caught the two cubs (which were about two months old and a shade larger than our infant at the hut), which bit and scratched vigorously, and strapped them by the neck to the sledge, which Armitage had now come up with. We then went on our way towards Bell Island to look for the weather-board hut that Mr. Leigh Smith had put up thirteen years ago. We went all round the island, but could find no signs of it. It has evidently been blown away. We had already walked nearly all the way, as the pony went so badly. I

left Armitage to take the pony and sledge a short cut across the island, while I followed the coast all round to avoid any chance of missing the hut if it were still standing, as I thought. The island is about four miles round and a mile and a half long. The east end rises to high basaltic cliffs 930 ft. high, falling to a raised beach about 75 ft. high.

I found a very old vertebra of a whale, rotten from age, on a raised beach about 80 ft. above the present sea level. Mabel Island appears to be entirely covered with glacier, except for a short distance between two high basaltic cliffs, where a long spit runs out to the sea; whereas most, if not the whole, of Bell Island is clear of ice, and of nearly all the snow, in the end of summer. Bell Island has only a small ice-cap above the cliffs, whereas Mabel Island has a dome-shaped cap of considerable altitude above the cliffs on the south-west side.

As we were passing along the floe at the foot of the high cliffs, "Sammie" spotted two bears together, about two-thirds of the way up the ice-covered slope of the talus, 600 ft. high, and began barking loudly. I climbed up as high as I could get, which was to within eighty yards of them, and at my first shot put a bullet through the head of the higher one, a female, which was looking at me over the back of her husband, and she came bowling over and over, head over heels, down the high, very steep slope on to the floe below—a very pretty sight. The second bear (a huge male over eight feet long) at first dashed down as if making for me, but a shot from my .303 evidently convinced him that I was not at all a nice person to become acquainted with; and he floundered and rolled down the slope in the direction of Armitage and the pony and sledge. I gave him another bullet as he passed me. Armitage was unarmed, which gave me

considerable anxiety on his behalf, and I slid down to his help. However, two more shots practically knocked all the damage out of him by the time he got to the bottom, but even then, and in spite of a broken right shoulder, he got on to his legs and looked savagely around for some one to go for! A fourth shot through the heart finally shut him up. He was an enormous elderly he-bear, the largest I have ever seen, and considerably over eight feet long. We had now a bag of five bears, which was pretty good for one afternoon. It was now 8 P.M. and getting dark, and we were twelve miles distant from the hut, with a done-up pony. Still, the he-bear being of such unusual size I was very anxious to take his skin, so Armitage and I set to work at him in a temperature of 30° below zero, and soon after 9 P.M. got his skin off and had taken the head and fore-paws of the she-bear and lashed them on to the sledge. After a lot of whipping, we got the pony under weigh at a crawl. Thus we slowly proceeded, Armitage walking on one side with the whip, I on the other with the reins. After going about two miles the pony lay down and refused to get up, explaining that she was dead beat and could go no farther. It looked like an all-night's job staying by her for us. I at last got the harness off, and managed to get her up. We tied the little bears on the top of the sledge and covered them up with a reindeer-skin, and left them as warm and snug as we could make them, to be fetched next day, and proceeded to trudge to Cape Flora, carrying my "militza" and rifle and leading, or rather dragging, the pony, as it would hardly walk. Armstrong brought up the rear, carrying his "militza" and the small camera, and endeavoured to bustle the pony into a walk. I took bearings of the rocks on Bell and Mabel Islands to mark the position of the sledge. So we proceeded over the

most abominable ice possible to get a pony over, especially in the dark and in a thick mist, that hid Cape Flora from sight, marking our course by a star that was visible. We at last reached the hut at a quarter to three in the morning, rather tired and very hungry. We had walked about twenty-eight miles in all. I mean to fetch the sledge tomorrow with a pair of ponies.

I much prefer Cape Flora for a wintering place to Bell Island.

I blistered my fingers with my gun badly when shooting the she-bear with the cubs. I used my bare hands in a temperature of -30° F. below zero, doing so because she was charging around so briskly, and was altogether a rather unpleasant old party. I was afraid that mitts might delay me in getting in a cartridge at a critical moment.

Weather : Calm throughout. Fine and clear in the early part of the day. Very misty in the evening and at night.

March 21st, Thursday.—Blowing a fresh gale, with driving snow, and a temperature of -20° to -27° below zero. I set to work and manufactured some double reins, and had one of the reindeer sledges rigged up for harnessing up a pair of ponies. At 1 P.M. I went to the ship and saw the captain about some more flour and sugar for the ship's company, as he tells me they are again without any. I sent down a 196 lb. cask of flour and 56 lbs. of sugar. At about 2 P.M. the gale looked like dropping, and we harnessed up the black and bay ponies, but before this was done it was blowing, and snow was driving harder than ever. I, however, decided to try it, and we started off in great form at a hand gallop as the ponies felt uneasy at the loose sledge behind them; but before we had gone half a mile I had my right cheek badly frozen, and we could not see sixty yards ahead for the driving snow. As it was quite useless to go on, for we should

never find the sledge in such weather, I decided to wait until to-morrow, much to Armitage's relief, who was ready enough to go if I made up my mind to, but did not at all relish it.

I have had all hands, including the crew, getting things ready for our second push North, but there is a lot to do.

I fear the little bears are having a bad time of it out on the sledge we left behind, but it can't be helped.

I went to the ship and saw Mouatt, and sent him some port wine and vegetables. He is very depressed, poor fellow, and doesn't seem to mend much. He is an old man, and should not have come on such a voyage as this.

March 22nd, Friday.—I hear that "Old John," the other man who has not eaten bear's meat all the winter, has now got a thorough scare owing to Mouatt having scurvy, and now is in deadly fear of taking it himself. All his bravado about not needing fresh meat is gone, and he not only eats his portion at the regular meals, but gets up in the middle of the night to cook and eat bear steaks in his cabin, and several of these "delicacies" have been found in his bunk. He has a little rheumatism in one ankle, which he is in terror of proving to be scurvy. He shows it to the doctor every day, and goes into the fore-castle to show the hands there, and to ask if it is "like Mouatt's." It is *very* amusing! He will be all right now.

Armitage and I started off at 11 A.M. to fetch the sledge left near Bell Island on Wednesday night. I drove the two ponies harnessed to a reindeer sledge. We went out at a spanking pace over some very rough hummocky ice, in a manner that would, if poor Franklin or Parry could wake up, make them open their eyes. The ponies behaved splendidly, and we got them over places

that would have astonished some people at home. We found the sledge all right, with everything intact, and the two little bears alive and kicking, and as full of bite and scratch as ever : starvation for two days had not quieted them in the least. We lashed this sledge behind the one driven out, and so started back, but in crossing the "stone quarry" my companion unfortunately fell across it and broke it, and I had to place its load on the reindeer sledge. We got back at 3 P.M. (twenty-four miles in four hours, and over much rough ice). I had my "turn out" photographed on our getting back.

We are trying to feed the two new-comers on meat extract—we can't afford to feed three bears on condensed milk. We have now three bears, six pups and a bitch living in the same room (12 ft. by 13 ft.) with the eight of us. A fairly good menagerie !

I have christened the three cubs, to distinguish them, "Gertie" (Cape Gertrude), "Mabel" (Mabel Island), and "Benjy."

March 23rd, Saturday.—I weighed the three bear cubs, and found that the Mabel Island she-cub weighs 18 lbs., the he-cub 17 lbs., and our Cape Gertrude one, 17 lbs. The new-comers are much quieter and better behaved than the Cape Gertrude cub, and have met with a very unfriendly reception from the latter, who has "gone for" them whenever she has been brought near them. I am afraid that it is a case of familiarity breeding contempt with her, for she has become most shockingly bad-tempered.

March 24th, Sunday.—Blomkvist and I did some skiing on the floe, and ran several of the snow-covered slopes on to the ice. I had all the Expedition party out, and instructed them in the erection of a tent, and dictated a number of instructions to the doctor to be followed

THE RETURN FROM OUR BEAR-HUNT, MARCH 23, 1895

when camping out. I intend to send the doctor, Heyward, Fisher and Child with two ponies with stores as far as Camp Point, to give them a little experience in travelling and to carry on provisions. It is only fifteen miles from here, so they can come to no harm, and should only be out one night.

March 25th, Monday.—The Mabel Island bears are rapidly becoming as noisy and rowdy as the one from

OUR INFANT BEARS "MABEL" AND "BENJY"

Cape Gertrude, more especially the she-bear Mabel, which is particularly bad tempered. The little he-bear has always been better behaved than the other two of the feminine gender, which no doubt is a remarkable anomaly.

Spent the morning writing and making out weights and quantities for our trip North. Got out the aluminium boat from the drift and mounted the middle section on a sledge, and brought the end section into the house and thawed it out before the canvas gunwales could be

raised. Painted canvas is of no use for these latitudes. The aluminium wire netting and coiled wire is very liable to rot from exposure to the sea air, and is of little service.

I sent the doctor, Heyward, Fisher and Child out with Blomkvist and two ponies with sledges to get used to them, and to practise tying them up to hummocks and hobbling them in camping for the night.

Armitage and I went out on our "skis" for a short turn, and ran the steep ice slope on to the floe, coming down at a terrific pace before a stiff north wind. Armitage very pluckily stuck to it, but came a most fearful cropper every time before reaching the bottom.

March 27th, Wednesday.—Blowing hard in gusts all day. Writing and superintending various jobs. Fisher and the doctor engaged in weighing out provisions.

To-day when reading an aneroid barometer I noticed the pointer fall a tenth during the gusts of wind, and after they had passed, immediately rise again. Am having the new pony harness again altered as it chafes the ponies' shoulders still in spite of the chest protectors. Am now fixing them to the Russian collars after the wood-work has been removed. There is an awful lot to do, as I attend to every little detail myself, even to seeing that each man's furs fit him properly.

March 28th, Thursday.—Hearing a great rumpus among the dogs made fast to spars behind the house, a little before 8 A.M., I sent Heyward to look over the snow rampart to learn the cause. He rushed back reporting a bear to be creeping up to the dogs. I put a coat and skin boots on over my pyjamas and followed by Armitage hurried out to find the bear close to the hut and looking over into the narrow enclosure. I gave him a Tweedie bullet in the neck which practically finished him, but as he struggled away six or eight yards he got

two more from Armitage and me. He was a very bold young he-bear. He had only a little grass in his stomach, and his lungs were studded with round, hard, white nodules of the size of canary seed, which suggest tuberculosis. I have asked the doctor to preserve some for examination in England.

Note.—Professor Vaughan Harley informs me that he has also found miliary tubercles in some bear's liver he has kindly examined for me.

We are hurrying on our preparations for a start. I sent the two Mabel Island bears, "Mabel" and "Benjy," to the *Windward*, as John has offered to take charge of them. They turn our place into a perfect bedlam of noise.

March 29th, Friday.—Preparing generally for our trip North. Weighed the aluminium boats—Boat of aluminium (entirely) middle section, 150 lbs.; boat of aluminium (canvas gunwales) middle section, 120 lbs.; two end sections, 50 lbs. each.

I had fresh sennit halters and reins made at the ship and got the captain to work making bags for provisions and to construct three small canvas basins. I have sent the she-cub "Gertie" to be placed under John's care at the ship. We can now hear ourselves speak. She and the other she-cub "Mabel" have become perfect little furies. The he-cub "Benjy" is much quiter and better behaved.

March 30th, Saturday.—Continued our preparations. Brought, after much struggling, the middle section of the aluminium boat into the hut to thaw out the painted canvas gunwales to enable us to raise them. Sent the four ponies down to Sharpe's rock where the wind has blown away the snow, exposing some green grass which was suddenly frozen at the end of last summer. They will eat this grass and thus save hay which will run short. I am saving all straw packing and chaff for

them. They are not fastidious, thank goodness! I had them hobbled out and sent Doran to protect them with a rifle from bears. He wandered up and down, stamping his feet and slapping his arms to keep warm. As one of the bay ponies has the character of being a perfect terror for kicking and rearing, and broke away from Fisher on his way out to the feeding ground, I went out myself at 1.30 P.M. and unhobbled him and brought him back.

March 31st, Sunday.—Writing all day until 5 P.M. as it was snowing all the time. We then all went out ski-ing down the steep slope from the plateau on to the floe a little west of the ship. The snow stopped for an hour and then came on thicker than ever, forming a layer on the flat, without drifting, of about five or six inches by the evening. This is the first time since last September that we have had fairly good snow for ski-ing.

As Mouatt is not improving fast, I intend to have him up at the hut for a week or so; the change will do him good.

Weather: At 8 A.M. overcast, misty weather with thick falling snow and light airs from E. to W. At noon light N.E. airs and overcast misty weather, and thick snow. At 4 P.M. light E.S.E. wind and similar weather. At 8 P.M. fresh E. by S. wind and overcast, snowing less thickly but the falling snow now driving hard and densely. Weather cleared slightly at 5 P.M. and stopped snowing for one and three quarter hours, but at 6.45 P.M. became overcast entirely again and resumed snowing heavily.

April 1st, Monday.—Blowing a gale with densely driving snow. Deep drifts have formed round the hut. This weather is delaying our preparations dreadfully, as we can do nothing outside. The wind carries all loose articles away, and the snow fills everything.

Spent the day writing and doing what jobs can be

DRAGGING OUR WHALE-BOAT FROM THE DRIFT

done indoors—darned my mittens with string, &c. I have no darning cotton.

Mouatt is unable to be moved from the ship so long as this kind of weather continues.

April 3rd, Wednesday.—Blowing furiously, and the snow driving fiercely. The wind has now swept clear of snow articles that had not been seen since last October. It is certainly the worst gale, being the most continuous in strength, of any we have experienced here. The weather is greatly delaying our preparations.

I spent the day in writing, but about 5 P.M. suggested a walk on the floe as being preferable to being mewed up in the hut any longer, which, as events quickly showed, it was as well we did not take. Soon afterwards to my intense surprise Smith came running up from the *Windward* to tell me "the ship is adrift." I put on my cap and ran out of the hut followed by the others. On reaching the point I found open water all round her on the seaward side, the floe broken up, and the ice rapidly moving off, carrying away on it a whale-boat, a "Jack," a Russian sledge, and various smaller articles. But the ice nearer in shore and the ship herself were held by the berg against which she is lying. The question was how long this grounded berg would hold. The *Windward* would, of course, if adrift be helpless. All the sails and ropes are frozen hard and there are no fires in the furnaces, and various parts of the engines were removed for safety last October. All hands were at once set to work to get the other boat which lay on the ice on the land side of her on board. A difficult job as she was buried in a drift and also packed quite full of hard icy snow. This, however, after a lot of trouble was at last accomplished. I went and examined all the lines to the ice and saw that they were secure and had another carried out from the starboard bow. Frost-

bitten faces were the order of the hour during all this time as the gale still continued with a temperature many degrees below zero and the snow drove furiously. One of the men had to retire with both his cheeks completely white all over from frost-bite. Having made the ship as safe as circumstances would allow and secured the lines we went back to the hut.

At 10 P.M. I went down to the ship to see how things were. She was still safe in her position but the old two-year-old-floe to the east has completely broken up, and the sea is now roaring right under the plateau by Leigh Smith's hut, but the floe-berg at the point still shields the ship. Things look anything but pleasant. I had Allan the chief engineer down a'ft and told him to set to work early to-morrow with Smith and the firemen to get all the engine fittings back into position, and everything ready to get water into the boilers and steam up in case of necessity. I also told the captain to set all hands to work early to get ice into the tanks for ballast as the ship is at present very light. An officer and one of the crew are to be constantly on watch night and day. I much fear the ice north may also be broken up and may give us trouble when sledging.

Weather : At 8 A.M. fresh to strong E.N.E. wind increasing in force and blowing a strong gale at noon, which gradually increased to a whole gale by 8 P.M. with furious gusts at frequent intervals. Cloudy, misty weather and thick driving snow.

April 4th, Thursday.—The ship is still safe, but I feel very anxious about her. "Bear Corner" has disappeared, and there is a large tract of open water south, east and west, and the gale from the E.N.E. is still whistling, but chopping about. It ceased towards noon. The wind allowing, all hands went on at the outdoor preparations for our journey and clearing away the deep snow drifts round the hut.

About 8 P.M. I received a message from the captain, asking if Mouatt might come up to the hut at once "as the ice is coming down on the ship." Not wishing a fuss to be made or an alarm caused, and as I had arranged for Mouatt to come up to-morrow, I replied "No," as I had made preparations for his coming up then. On reaching the ship I found a large floe and some smaller ice behind, and on the land side of it, rapidly drifting west with the tide and current, with a good deal of pressure, which, however, fortunately did not touch the ship, as she is out of the main strength of the current. The floe slowly and irresistibly advanced towards us, and there was cause for anxiety for some time, but it drove clear of the ship and the point of it struck with a crash against the land-floe beyond, piling up mounds of broken ice, and then gradually slewing round and crushing up the bay-ice, enclosed the ship, leaving her snug and safe in the midst of it. The smaller ice coming in behind quite shut her in. She had a near shave however, and had the large floe hit her, would have crushed her like a walnut.

The crew were much alarmed for some time. As an example one came to me and asked permission to take his chest ashore, another wanted to have coals taken out and landed, and I understand that all the members of the crew had already put their things in readiness to remove them from the ship. If I had allowed our scurvy patient to be landed it would have been a signal for a general clear out. I would not allow a single thing to be removed from the ship. Time enough for that when there is real cause for it!

In the afternoon Armitage and I took out a sixteen-foot Norwegian boat and I shot four dovekies for Mouatt. The current then was running west very strongly, carrying

bay ice with it, and a stiff breeze from the east, too, made it very difficult to pull against.

Weather : At 8 A.M. unsteady wind from N.N.E. varying in force from 2 to 7. At noon fresh to strong E. gale. At 4 P.M. fresh E.N.E. wind. At 8 P.M. calm. At 1.30 P.M. the gale suddenly dropped and became almost calm, increasing again to a fresh wind at 2.30 P.M., and decreasing to calm at 6 P.M. Snow driving hard during the gale. Misty in early morning, fine and clear the rest of the day.

April 5th, Friday.—The ship now lies snugly surrounded by bay ice to about seventy yards off her, around which the current runs carrying drift ice.

Mounting sledges, and I have now two loaded; got the middle section of the aluminium boat into the hut to paint, as it is much rubbed. I find aluminium is fearfully corrodable unless well protected. In the afternoon, leaving the others to push on with the work, Armitage and I went out and shot forty looms, rotgies and dovebies, in some open lanes of water near the ship for our scurvy patient, taking the twelve foot Norwegian boat and paddles. I sent the whole ship's company a supply of birds and an extra number for Mouatt. He, by-the-bye, declines to change his quarters. He fears, he says, that he will "give too much trouble if he comes to the hut." He must please himself in this matter as he is so ill, and the doctor advises me to let him have his own way about it, but I am sorry.

All the large space which yesterday was open water is now filled by a mixture of bay and very high crushed-up ice, and a few lanes which close up and open as the current moves the floes onwards.

The crew are still busy getting ice on board as ballast.

April 6th, Saturday.—Packing the sledges and mounted the middle section of the boat.

The crew have been busy digging out the two whale boats I had reserved for our own use. I have given them

DIGGING THE WHALE-BOATS OUT OF THE DRIFTS

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one of our two to replace the one carried off by the ice, so that they may be well supplied in case anything happens to the *Windward* on the way home. The doctor shot a few dovebies in the evening, and I got them out of the water for him in the 12-foot boat. We did some ski-running over the rocks by the flagstaff for exercise where Dalstrom had been practising. We had some rather nasty falls owing to the very fast character of the snow or rather ice, the steep incline, and the hummocky character of the ice on the floe below. He and Blomkvist are first-class ski runners, and have been used to it since they were children. I have lent the crew several pairs of ski to amuse themselves with.

April 8th, Monday.—I sent the following order to the captain :

“ELMWOOD, FRANZ JOSEF LAND,

“*April 8th, 1895.*

“Let it be distinctly understood that no one under any pretence whatever is in any way to interfere with Mr. Leigh Smith's house (Eira Cottage) or any article there. It is private property and will be respected as such. Any one disobeying these orders will be liable to the penalties for so doing, and also to those for infringing the laws of property. I shall expect you to see that these orders are enforced.”

“FREDERICK G. JACKSON.”

April 11th, Thursday.—Writing hard all day until after midnight. The other members of the party are hurrying on our preparations. I went out with my shotgun taking Blomkvist with the 12-foot boat to get birds, as Mouatt has finished his, and we have run out also at the hut. I shot sixty-six looms, rotches and dovebies. I sent the ships' company a loom apiece and twelve for Mouatt.

April 15th, Monday.—I wrote out the following orders for the skipper :

“ELMWOOD, FRANZ JOSEF LAND,
“ *April 15th, 1895.*

“ You are at once to get the ship generally into a condition for immediate departure, the boats with sails and masts into a sea-going condition, and two months' provisions always secured on deck with casks ready to fill with water, and if possible to see that all sails and running gear are in good order and ready for use.

“ You are to leave here for London as soon as the ice is in a condition to allow you to do so, which will probably be towards the middle of June.

“ You will speak no vessel on the way, except in case of urgent necessity in the case of yourselves or her ; or answer any signals (except in the case of an English war-vessel) otherwise than by hoisting your ensign.

“ You are to touch at no port on the way or go near any coast unless compelled, until running in for the Thames when you will pick up a pilot as soon as you arrive off the English coast.

“ You will signal the ship's number on the first opportunity on sighting an English Signal Station.

“ If Mr. Montefiore and Mr. Harmsworth should not be at Gravesend on your arrival there, you must send a telegram to Mr. Harmsworth immediately, and proceed to Greenhithe and await there his arrival, keeping a pilot on board until the ship is docked.

“ I have instructed Mr. Heywood to give you what provisions are necessary for the voyage.

“ The chronometer must be on board by June 1, or before if it should be necessary. Both error and rate, together with our latitude and longitude have been given to you.

THE OFFICERS AND CREW OF THE "WINDWARD," 1894 TO 1895

“In the event of abandoning the ship every effort must be made to save the mail.

“FREDERICK G. JACKSON,
“Commanding the Jackson-Harmsworth
Polar Expedition.”

Our mail is nearly ready.

I sealed all the letters up in a canvas bag which I had soldered up in a biscuit-box and placed in a cabin on board the ship. The key of which I enclosed in a note to Harmsworth which I have given into the skipper's care to deliver to him.

I went down to the ship and saw him ; I handed him his sailing orders and gave him final directions in case the ship should have got away before we return, which by the present look of the ice seems very likely. We then dragged all the loaded sledges down on to the floe ready for the start north to-morrow, and gave the final touches to our equipment.

Perpetual daylight begins tomorrow.

CHAPTER X

SECOND SLEDGE JOURNEY, 1895

April 16th, Tuesday.—Armitage, Blomkvist, and I left Cape Flora about 11 A.M., with three ponies drawing six sledges, with one aluminium boat with rations, &c., for two horses and three men for sixty-three days. I find I cannot conveniently carry food for three horses for the entire limit of time. We shall, however, probably lose a pony, or in any event can take pony food from the dépôt already established north. The doctor accompanied us with Heyward, with one pony and two sledges loaded with a fortnight's rations for them and the pony, three bundles of hay for us, and a sixteen-foot Norwegian boat to be left at the entrance to Markham Sound for our return journey if the ice breaks up behind us. We have 1823 lbs. on our six sledges, and the doctor has 650 lbs. on his two sledges. (This includes the weights of the sledges.) Both Blomkvist and the doctor had some trouble in getting their animals along, and the Norwegian boat rides badly. I drove all the ponies in turn to try and hasten them on, going backwards and forwards between the various teams. I gave the crew of the *Windward* a farewell drink on the ice before we left, and complimented them on their good behaviour through the winter. We camped, about 7 P.M., five miles to the north-east of Camp Point in Nightingale Sound. We travelled twenty miles to-day direct. I expect the ship to be away when we return, to judge

by the appearance of the ice off the land ; but one can never say.

OUR START NORTH, APRIL, 1895

April 17th, Wednesday.—I was turned out by the dogs barking at 6 A.M., and a minute afterwards the doctor came to our tent to tell me that a bear was coming

fast up to the camp. I turned out and got my .303 rifle and told the doctor to get his, and gave him the first shot. Mr. Bear came up on our tracks, and on coming near took a half-circle and came up from leeward towards us. When thirty-five yards off the doctor fired at him but missed, and half a second later I put a bullet into his forehead, which passed through the length of the head, along the vertebræ, and out again on the right side of the base of the neck near the shoulder. I used a nickel-covered Government bullet.

I took his head and paws, but had to leave the skin, which was a very fine one, owing to the weight. We always seemed to shoot the finest bears when away and cannot carry the skins back to the hut. He was a large he-bear, and had evidently followed us up through Miers Channel. We turned in again for an hour after this, and then struck camp and proceeded towards the depôt made on March 14. We can now see that Northbrook Island is somewhat smaller than on Leigh Smith's chart, and Miers Channel is much wider.

The snow is in ridges much cut by the wind, with rows of high hummocks. We reached the depôt at 10 P.M. We found a bear had pulled the flags down and thrown the hay about. He had also torn a large tin cylinder open with his claws, and had eaten the bear's meat pemmican inside.

We travelled about sixteen miles, but wandered about a good deal to avoid hummocks.

April 18th, Thursday.—We deposited the sixteen-foot Norwegian boat near the depôt between the two flags, and straightened up the articles pulled about by the bear, and then loaded up again. After finding a suitable place we started up the ice-covered slope of the land in a north-east direction. After proceeding some distance I found

that we could not get on farther with only one pony to two sledges. I then hitched up two ponies to each pair of sledges, and took the first two ponies on for about three and a half miles, and then returned for the others. It was very hard work for them, and it was only by constant and energetic exertions on our parts that we could get them up the very steep glacier slope.

We have come across a few cracks, but no real crevasses as yet. The horizon all round is very misty and the refraction very great, making it impossible to distinguish land with any certainty, or to fix our position. The bold rock to the north may be Peterhead, but, if so, it is much farther east than marked in Leigh Smith's map, and he is very accurate. To-day everything is very deceptive, a flat berg at one moment looking exactly like land and the next altering its shape entirely. The surface of the glacier has become very bad going, being now covered with soft snow with a slight crust upon it, which breaks and lets one in with a jerk up to one's knees at every step. It is very tiring for both horses and men.

We stopped at 9 P.M., as the ponies were played out and refused to budge any farther; and we also felt very tired too. Our camp is 1500 ft. above the sea by aneroid.

We went eleven and a half miles, having to go over the same ground three times, but only made good three and three-quarter geographical miles direct.

We made the ponies fast to the reindeer sledges, as there are no hummocks, which they immediately proceeded to eat, and gnawed nearly through the horizontal bars. They are terrible crib-biters.

April 19th, Friday.—I started at 9 A.M. with two pairs of ponies hitched to two sledges each—Blomkvist and I with the leading sledges, followed by the doctor

and Heyward with the other two. I left Armitage at the camp to take angles in case the mist lifted, and to work out a dead reckoning. I also left four loaded sledges to be taken on when I returned with the ponies. The snow is very deep, with a slight crust, and we crossed some very ugly-looking cracks partly blocked with snow. We proceeded true north for some hours, and crossed a dividing ridge from which the glacier slopes to the west. I there saw a new broad sound to the west, running about north-

OUR CAMP ON THE GLACIER

east and south-west, which I quickly came to the conclusion must lead to the entrance of Markham Sound. Immediately below me was a good-sized island, about six miles long and two broad, with a narrow channel between it and the island upon which we stood. Our dépôt is evidently about twelve or fifteen miles south-east of the Dundee Point of Leigh Smith, which I could see in the shape of a long low spit to the south of me. A small island, which looks like a large low berg, lies to the west of the spit, and is no doubt his Eaton Island.

Owing to the bad going and the frequency of crevasses, I decided to get off the glacier into the new sound, but

as the inclination of the ice-slope in that direction is very steep, I found it a difficult matter. As the crevasses were getting dangerous, I went on ahead to pick a way, leaving the others to follow carefully exactly in my footsteps.

The crevasses were now becoming very wide and numerous, being treacherously bridged with snow, and every now and then let one of my legs through as I stepped on them. But usually I could distinguish their outlines by a slight depression in the snow marking their course. I found that the farther I went north towards Markham Sound the worse they became, and I considered it to be too dangerous to try and take the ponies in that direction, so I returned to the others. On coming up to them I found the black pony down and floundering on the edge of a crevass, being partly in it, and it was with much difficulty we got him upon his legs again. There was nothing to be done but to turn in the direction of Dundee Point, almost directly south, where the angle of the slope is less, with fewer crevasses. I started off, followed by Blomkvist connected to me by a rope, to pick a way down ; the doctor and Heyward following exactly in our footsteps with the ponies and sledges.

As we approached to within a mile of the sea the slope became less and the crevasses ceased altogether. Here we unhitched the ponies and left the doctor and Heyward to take the sledges down by hand on to the sea ice, telling them to put up their tent and to camp in the bend of the bay between the new island and Hooker Island.

Blomkvist and I then started back with the ponies to our camp of this morning to bring on the remaining sledges. After about four hours plodding through some of the deepest and worst snow I ever waded through,

and having to fairly drag them after us as they had got very sick of the entertainment, we got back. I then fed the ponies, but we could only get a biscuit for ourselves, as our cookers and food were on ahead with the doctor. As it is such very bad travelling over the glacier, I decided to retrace our steps of the 18th and get on to the sea ice, and to follow the coast round Dundee Point to the place where I had directed the doctor to camp.

In coming down the steep slope near the depôt one of Armitage's 13 ft. sledges with hay on it, which rides badly, was overturned and smashed, and had to be left where it was after removing the soviaks, &c., to the other sledge. A very stiff breeze from the north-east had got up just before we got back to the camp, with driving snow, which, together with a temperature of -20° below zero, empty stomachs, and feeling a bit tired, made frost-bitten noses and cheeks very much the order of the hour.

However, after seventeen hours' tramping we rounded Dundee Point, and reached the spot at 4 A.M. where I had told the doctor to camp, and saw to our great satisfaction their tent pitched. They bustled about and made cocoa for us and got us some food, which we were very glad of, and generally behaved like angels. We had had practically nothing to eat or drink for twenty-three hours, and were hard at work all the time, and in severe weather too.

A young she-bear put in an appearance soon after we reached camp, and proceeded to stalk us in the usual way, and made herself generally a nuisance. To get rid of her, as I did not want meat or feel inclined for a chase, I gave her three Lee-Metford bullets at from 150 to 300 yards distance. All three shots took effect, but she managed to get away up the ice-slope, leaving a trail of

blood behind. When near the top of the slope, evidently thinking herself safe, she sat down and calmly surveyed us, her attitude being suggestive of a small boy "cocking snooks," but the third shot at 300 yards convinced her that her crowing was a trifle premature.

After feeding the horses and putting up our tent, we turned in at 8 A.M., having had twenty-five hours of it since our last camp, of which Blomkvist and I were marching most of the time. He and I tramped thirty-five geographical miles, pulling and hauling at ponies and sledges nearly the whole way.

April 20th, Saturday.—We turned out at 3 P.M., after about six hours' sleep, feeling all right again. I decided to camp, and to send the doctor and Blomkvist, who had dropped his pipe on the way here yesterday, and was anxious to look for it—pipes are treasures in these parts that can't be replaced, back with a pair of ponies and a reindeer sledge to ride half the way on, and a long sledge to bring on the hay which had been left behind yesterday, and part of the provisions from the depôt, as I mean to move everything and make a depôt near Dundee Point.

I occupied myself in repairing sledges, halters, &c., which badly required it, and doing a variety of odd jobs. All the rocks in this neighbourhood are basaltic. Dundee Point would be quite clear of snow in summer; likewise the long island.*

April 21st, Sunday.—The doctor and Blomkvist returned with the hay and part of the depôt at 4.30 A.M. After having some food, we all turned in and slept for seven hours. We then packed up and made a depôt at the point of a stony ridge, where it juts into the bay. We deposited there fifty pounds of biscuit, fourteen

* Since named by me Scott Keltie Island.

pounds of boiled mutton, two gallons of spirit, tea, cocoa, sugar, milk, butter, oatmeal, and some small flags. It will be a great thing to know we have this depôt in case of need. We also left there three pairs of ski, two ski sticks, and the broken sledge, for the doctor to take back with him to the hut. We marked the depôt with a Jack.

We passed the bold, square, isolated rock of basalt standing in the bay between the island and Hooker Island named by me Rubini Rock. Scott Keltie Island is flat, about one hundred feet to one hundred and fifty feet high, with low cliffs on the east side dropping precipitously into the sea.

There were many tracks of bears and foxes to be seen crossing the ice between Hooker and Scott Keltie Island. We also saw four "mollymokes" * and a "dovekie." The ice to the north of the island is very recent bay-ice with salt efflorescence upon it, with a frozen-up walrus hole; and I hardly like taking the ponies upon it. There was open water here not long ago. This ice has no snow upon it, and has a very wind-swept appearance. We camped at midnight near the bold rock † to the north of the island, as there appear to be no hummocks for some distance ahead to which we can tie up the ponies. The sky at the time of camping became overcast and misty.

April 22nd, Monday.—We struck camp about 9 A.M., and passed the bold headland, travelling over level bay-ice for some distance; but after passing the cape we came upon very hummocky stuff, with a large number of flat-topped bergs in every direction. This ice had

* Fulmar petrels.

† Named by me Cape Albert Markham, after Admiral Albert Hastings Markham.

evidently drifted into the channel last autumn and become frozen in.

It has been snowing and very misty all day, making it very difficult to pick a way through the rough ice. The new sound (named by me Robert Peel Sound, after the late Sir Robert Peel, Bart.) is bounded by high land on the east side, with frequent high, black, basaltic headlands jutting out of the glaciated land on that side. On the west side it appears to be low, and, with the exception of one cliff of weathered columnar basalt,* to be entirely ice-covered.

We stopped once in a march of fourteen and a-half hours for a short time, to make a pot of tea; and then proceeded up the sound in a north-easterly direction until 11.30 P.M., when we camped. The weather became worse as the day went on. Our course has been a very irregular one, owing to the rough character of the ice and dense mist, since passing the cape; although before that point was reached the ice was level bay-ice, which wetted our fur boots with the salt efflorescence upon it. I fear a gale may break it all up and cut us off from returning.

We have passed many long, low, flat bergs in De Bruyne and Nightingale Sounds; and to-day were close to one about a quarter of a mile long, and standing from fifteen to twenty feet above the level of the floe. The doctor quite thought he had found a "paleocrystic floe."

April 23rd, Tuesday. — Blowing a gale from the E.N.E. with falling snow, and driving it and the already fallen snow before it furiously. We cannot see twenty yards from us. There is nothing for it but to camp until it clears a bit. The doctor and Heyward have to

* Named by me Guy's Head in compliment to our doctor, who was at Guy's Hospital.

remain where they are, as they cannot start back to the hut in such weather. Their limit of time is now up.

The weather went from bad to worse as the day advanced, and towards evening blew a strong gale with blinding snow. Our tent is filled with it, and it penetrates everything, and things are a trifle uncomfortable. I hope it will clear up to-morrow, so as to let us get on; but the barometer is still falling. We passed the day crouched up in the tent, and occasionally going out to look for signs of the weather clearing or to feed the ponies.

April 24th, Wednesday.—No improvement whatever in the weather this morning. The tents and sledges are nearly drifted under; we shall have to remain where we are at present. I fear that the continuance of such a strong gale may break up the ice both north and south of us. There appears to be open water to the east of us, by the flight of flocks of looms in that direction. We have been obliged to remain camped all day.

The wind changed to north, and dropped a little towards night; and we all set to work to clear the sledges of snow, and I repaired a sprung sledge. We find the hay very troublesome to carry, making the sledges top-heavy, and causing many capsizes. I shall endeavour to dispense with hay in future. The long thirteen-foot Norwegian sledges are hardly strong enough for the rough work ponies give them with top loads, and I shall in the future use the nine-foot six-inch ones.

April 25th, Thursday.—Still blowing a fresh breeze, with a fall of temperature. Snow driving and horizon very misty. We struck camp about noon, and the doctor and Heyward, with a bay mare pony, left for Cape Flora, with orders, after taking two days' rest and refitting with ten days' provisions, to remove the

remainder of the first dépôt and sixteen-foot boat to the other dépôt made on April 21st.

We (three of us and six sledges and three ponies) continued on our way across the entrance of Markham Sound, over very hummocky ice and deep snow. After proceeding about eight miles we found the channel widen out very much to the north-west, and we can see no land that way. The mist, however, prevents us seeing anything at any distance. The ponies, the bay in particular, are giving us much trouble by gnawing their halters, reins, &c., in fact everything within reach. We camped about midnight, about four miles off the land to the east of us.

The country up here is quite different to what is marked in Payer's map. We find open sea where land is there charted, and islands in the place of main land.

April 26th, Friday.—On turning out, the weather having improved, we took a meridian altitude of the sun for our position, and found our latitude to be $80^{\circ} 35' 20''$ N. I stop frequently to take bearings and to chart in the coast lines.

A temperature of 20° below zero, and a fresh breeze, makes it a bit cool.

A wide sound runs south-east from here; doubtless the entrance to the Markham Sound of Payer. The sound divides at the eastern entrance, and a smaller channel takes a more southerly direction. Two rocky projections are visible at the eastern entrance, which from here look like islands separated by a channel. We passed over for the first four miles very rough ice, with deep snow evidently at least two seasons old; and then got out on more level ice, but with the snow still deep, but harder and very hollow, and much cut by the wind.

We travelled due north towards a high bold cape,* probably to the north-west of the Cape Fiume of Payer, and in the neighbourhood of his Richthofen Peak, of which we see no signs.

Very high land is indistinctly visible to the west, at least twenty-five miles off. None at all can be seen to the north-west. A strait appears to run between this high land and Leigh Smith's Alexandra Land, but it may be that it is a bay surrounded by lower land, which at this distance looks like a water channel.

What has become of all the mass of land marked in Payer's map to the north of our position? None exists, and the salt sea takes its place.

I have decided to go direct north from here in the hopes of finding a practicable route in this direction; instead of going east into Austria Sound and following in Payer's footsteps. The horizon is very foggy towards Austria Sound, and by the look of the sky and by the flight of birds in that direction there is open water there. The whole coastline east is studded with bold black rocks jutting out of an ice-covered land.

We camped at midnight nearly abreast of the bold cape (Cape Richthofen), which we have made for. We did about fifteen miles direct. The temperature keeps about 20° below zero.

April 27th, Saturday.—We found a fresh breeze from the east blowing, with driving snow, when we turned out. Before leaving camp we took a meridian altitude of the sun, making our latitude $80^{\circ} 47' 18''$ N.

We started off, intending more closely to explore the cape, with the object of leaving the aluminium boat there and of making a dépôt. The breeze had now increased to a fresh gale, with dense driving snow, and finding the

* Named by me Cape Richthofen.

ice very rough indeed towards the cape, and as the small wind-swept talus below the cliffs offers no spot upon which a boat could be left, without a great risk of its being blown away or of its being carried off by a high sea in the summer, I struck out again north along the glaciated coast towards a bold headland about ten or fifteen miles away—named by me Cape Fisher.

After passing a glacier face of about seventy feet high to the north-east of our morning camp, I saw in a small bay a spot formed by the lateral moraine of a glacier, which looks suitable for a dépôt, and struck eastwards towards it. We put up the tent with great difficulty in the howling gale and driving snow, and proceeded to dig out a hole in the snow behind a large boulder, near the beach at the foot of the moraine, where we deposited the boat, protecting it with stones both around it and inside. I also left there one week's provisions for three men, three horses, and two dogs. We had not finished our work until 3 A.M. on the 28th.

The lateral moraine is two hundred and fifty feet high and about six hundred yards wide, and is squeezed up into a wedge-shaped ridge. The glacier itself descends at a steep incline, between two high basaltic cliffs from two to three miles apart, from a domed hill about fifteen hundred feet high and two miles inland. Few crevasses are to be seen on the glacier.

The tidal rise and fall here is very small, and certainly not more than at Cape Flora.

April 28th, Sunday.—It blew very hard all night, with violent gusts of storm-force (force 11), with fiercely driving snow. Two of the ribs of the tent were smashed, and the whole tent was threatened to be swept away. We spent most of the night in staying it up, using the ice axes and ski sticks to do so, and sitting with our

backs against the windward side, to support it against the violence of the gale, as we momentarily expected it to go—a cheerful way for tired humanity to spend a night. After some hours of this little amusement, the wind decreased somewhat in force, and we lay down again and got a little sleep. When we turned out about noon we found it still blowing freshly, with strong gusts, thick soft snow falling, and the sky and atmosphere as dense as a hedge, so as to prevent us seeing more than fifty yards ahead at all, and nothing distinctly for more than twenty. We are having luck in weather! We shall have to remain where we are until it clears up a bit. Snowing heavily all day, but the wind dropped towards night. Armitage and I climbed to the top of the moraine to look round and to examine it. I found on the top a quantity of black lignite (showing the rings and grain of the wood very clearly) and some fossiliferous shale. I removed a considerable quantity for specimens. Also I found two botanical specimens, which I packed up for Fisher, one of which is *Bryum obtusifolium* he tells me.

There are high cliffs behind the dépôt on which I could hear little awks. I fixed a Jack in some stones, about fifty paces south-west from where we buried the boat and made our dépôt. I tied a label to the staff, and on it intimated that a note in a tin was at the foot of the flag. The latter I addressed to Mr. Harmsworth, with a request that the finder would send it to him, and I stated that three members of the Jackson-Harmsworth Polar Expedition had arrived there on April 28th, 1895, and had left an aluminium boat and a week's provisions for three men, three ponies, and three dogs, fifty paces to south-east of the flag, behind a large boulder; and that we intended to try and push north from here through

the undiscovered country without following Payer's footsteps up Austria Sound.

We find that by our observations and dead reckoning we are in lat. $80^{\circ} 52' 45''$ north and long. $4^{\circ} 15' 24''$ east of Cape Flora.

April 29th, Monday.—A bear approached our camp at 2 A.M., just as we were finishing what we called dinner. He proceeded to stalk us in the usual manner, under cover of the hummocks and from leeward. At about eighty yards distant he hesitated, and delayed so long approaching nearer—neither would he go away—that I fired, and put a bullet in his neck and knocked him over, but picking himself up he started off, and I gave him a second in the hind quarters, and again a third in the flank as he slewed round. This again knocked him over, and he lay struggling on the ice for nearly a minute, when, to my surprise, he got up and made off again, covering himself with the hummocks, no doubt by accident, so that I could only see the top of his back, at which I fired, at about three hundred yards range, but without effect. He left the floe and crossed the glacier slope in a N.N.E. direction, leaving a blood trail behind him that could be seen for at least a mile. A bear's vitality is extraordinary! We should have been glad of his meat now. After turning in for a few hours we found the weather had cleared sufficiently for me to see what direction to take to proceed north. We started across the fjord or sound towards the high basaltic headland, Cape Fisher, lying nearly true north from the depôt. The fjord is cut into four smaller bays, with points of land between, and we discovered the land upon which our last depôt is made to be an island, as the sea runs through at the north-east point into Austria Sound. When about half-way across the bay, the black

pony which I was driving ahead suddenly floundered into some wet boggy snow, with water in the deeper layers, out of which I got him with some trouble. Evidently the recent gales and the high temperature of yesterday have shaken the ice up, and the tides are forcing the water through the cracks. I fear another gale might break these floes up entirely and cut us off. There are lots of looms and mollymokes flying around, so that there will be open water here soon. The Zichy Land of Payer has practically disappeared from the map, and the land south of his Karl Alexander Land, is only a mass of islands. No land can be seen to the northwest only a large frozen sea. The channel up which we have travelled, and which is as wide as the English Channel, I have named the British Channel.

We camped at 10.30 P.M. about half a mile off, and abreast of Cape Fisher, which is about five hundred feet high, around which large flocks of birds are flying. Here the basalt rises direct from the sea.

I stopped twice on the march to take angles and to make sketches of the coastlines. We came about ten geographical miles.

April 30th, Tuesday.—A fine sunny morning, but with a misty horizon. We took observations for longitude at 9h. 35' 9" A.M. (mean time at place) and a meridian altitude for latitude.

Armitage found the latitude to be $81^{\circ} 0' 38''$ N. We took second sights for longitude to mean with the morning sights at 3h. 59' P.M. About 3 P.M. the black pony, which I was driving ahead as usual with my two sledges, suddenly sank up to his girths in slushy snow and water, and we were both of us soon fairly stuck in it. I was wading about above my knees in slush and water trying to get him out, which after a time I

succeeded in doing, but only to flounder into more in a minute or so. On the surface all the snow looked sound, and there was nothing to indicate this boggy condition.

The ponies driven by Armitage and Blomkvist were soon in a similar condition, and we had to take the bay pony out of its harness and drag the two sledges out through the knee-deep slush and water by hand on to firmer snow. We are making for an island* to the north, but we found that the further in that direction we proceed the more numerous become the cracks and the deeper the water and slush. I decided to go closer in towards the shore and to follow the land, for to proceed straight across the floes is simply out of the question for either the ponies or ourselves.

Just as we had extricated them and the sledges from a morass of slush, and I was marching ahead with my long ice-axe to sound the snow and to pick a way (there was nothing on the surface to indicate sound snow and ice from the swampy, and it was not until one stepped upon it that its treacherous nature was discovered), I saw a bear coming along on our tracks behind us at a fast trot. I returned to my sledge and got my .303 rifle and took up a position by the rear sledge. He came straight up towards me with a rush, and not in the usually cautious manner adopted, and I remarked to Armitage, when I was on the point of firing, who was a few yards behind me, "Did you ever see anything like this?"

At about thirty yards' distance I fired and shot him in the neck and tumbled him over, but he got up again and showed a very evident inclination to again make for us, but a second shot from me behind the right shoulder,

* Mary Elizabeth Island, named by me after my mother.

as he showed me his flank, prevailed upon him to change his mind, and finally knocked him out. But although this bullet, as a subsequent examination showed, had penetrated his lungs and the upper portion of his heart, he ran twenty yards after receiving it. He was a large he-bear of remarkable boldness and determination, and one it would have been as well not to miss when firing at, or he would probably have made matters extremely unpleasant for us. We cut off some meat for ourselves and dogs of which we were very glad. After this little incident, which put us all in a good humour, we struck across into the bay and followed the glacier face, meeting with swampy patches every now and then which gave us endless trouble, towards a low, much-weathered rock, of columnar basalt, about six miles north of our morning camp, near which we camped.* Here also the basalt (columnar) rises directly from the sea. The bay pony has been going very badly for some days and looks like a plate-rack. I fear she won't last out much longer. She evidently has not the constitution to stand this kind of thing. I took one of the two sledges yesterday which she was drawing and added it to the two which my pony has in tow. I fear our pony purchaser was much "had" in his deals, as the black is the only good one we have. It is rather risky work pushing on over these breaking-up floes, and I am afraid of losing the ponies through the floes becoming impassable for them, and these constant bogs will completely wear them out. They are always wet, or else their coats are hard-frozen; lumps of ice dangle from them, and they look more like white ponies than bay or black. A strong S.E. or easterly gale would very probably carry all this ice out, as

* This cape I named Cape McClintock, after Admiral Sir F. Leopold McClintock.

there is no land visible to the north-westward, and by the flight of birds and the water-sky in that direction there is evidently open water not far off out that way. Still I am very anxious to get further before turning back. We have been travelling upon sea-ice for some days now where land has been laid down. When one has formed one's plans on a supposed fact, which was the existence of a large body of land here, it is a trifle upsetting to find the fact a myth!

The thermometer has been down at zero again for some hours, and our fur-boots, breeches, and under-clothing are frozen as hard as boards as a result of our soaking. No one certainly expected such sloppy floes in April, although Payer met with a local patch in Austria Sound. It is horribly disappointing to have such a very short sledging time as this, and it quite prevents us going directly north further this spring. It can't be helped, however. I can now only follow the trend of the land in a north-easterly direction. Anyhow we have got some depôts ready for our next push north, and we have already considerably altered the existing map. Our position by morning sights for longitude are— $53^{\circ} 47' 7''$ E.; afternoon, $53^{\circ} 46' 37''$ E.; mean, $53^{\circ} 46' 52''$ E.; variation, $16^{\circ} 56' 30''$ E.; latitude of Cape McClintock, $81^{\circ} 08' 00''$ N. by D.R.

Our faces present a most ludicrous appearance, being covered with scabs and cracks caused by frost-bites and the sun. We look fearful ruffians.

May 1st, Wednesday.—I took angles with a prismatic compass directly I turned out. Too much wind and an overcast sky prevented observations for position. The land trends to the north-east. No near land (except a small island—Mary Elizabeth Island—three or four miles off) to be seen to the westward; only a dull heavy sky in

that direction, and birds are constantly flying that way. Apparently distant land is visible to the N.N.W., which looks like three islands.* After proceeding between four and five miles north, eighteen and a half miles east (magnetic) towards a bold headland,† I stopped and took further bearings and outlined sketches of the land. After proceeding a little further I could see that the fjord running to the eastwards evidently runs out into Austria Sound, possibly into the Back's Inlet of Payer, cutting up the headlands to the westward of it into islands, but the land is too high to see the exact connections from here. It would take weeks to thoroughly map this maze of channels and islands. It has been misty and overcast all day, rendering observations for position impossible. The bay pony has quite broken down and refuses even now to be led behind the sledges. After trying in every possible manner to get her forward, as she lay down every hundred yards and finally even after a long rest refused to move, I had to shoot her, poor beast. This is a serious loss.

The wind during our march got up from the eastward and had rapidly increased to a fresh gale with driving and falling snow and a rise of temperature, and we tramped on in a blinding suffocating blizzard. There is evidently considerable open water both to the north-east as well as to the west of us.

We camped about 10 P.M. in a furious gale and fierce driving snow, which gave us great trouble to get the tent up.

Our position by dead reckoning is—Latitude $81^{\circ} 19'$

* Since named by me William Neale, George Harley, and Erasmus Ommanney Islands, after Dr. William Neale, Dr. George Harley, F.R.S. (since dead), and Admiral Sir Erasmus Ommanney.

† Named by me Cape Mill.

30" N.; longitude $54^{\circ} 55' 32''$ E., and about three miles off the headland.

We have had very bad luck in weather and in the loss of a pony, also in the very early break up of the ice. We have, however, quite altered the map of Franz Josef Land and opened up a new route north, and well begun our system of dépôts. Geographically we have managed to do some good work, but romantically we have not made a very great advance towards the Pole. After all, solid work and indisputable facts are of more value than pushing over frozen sea, and I feel convinced that there is little land to the north of us, and I doubt if King Oscar Land exists at all, or, any way, it can only be of small extent.

CHAPTER XI

SNOW MORASSES—DISCOVERY OF QUEEN VICTORIA SEA

May 2nd, 1895, Thursday.—Blowing a gale from south-west, with heavy falling and driving snow, and the temperature has risen to 2° above freezing-point. All our furs and equipment are sopping wet, so is also the snow on the floes. I consulted with Armitage as to whether we had better proceed farther, as we expect the ice south of us to break up and cut off our return, and we shall lose the ponies; and by risking it still farther we can only follow this land a day or two farther along the coast, as an attempt to reach King Oscar Land—if such a land exists, which I much doubt—is quite out of the question now. Much of the ice we passed over farther south was very thin and light—bay-ice, in fact. Armitage advocates an immediate return, and rightly so I think, as I don't feel justified in further risking our ponies for the sake of a day or two's further advance. Certainly nothing could look more threatening than the present state of things.

A she-bear and her cub, at least two years old, put in an appearance about 11 A.M., and walked deliberately up to our camp. At forty yards I fired two shots successively, aiming at her head, but to my surprise missed her with both. Still she and the cub stalked on quite unalarmed. I then discovered that in my haste, in pulling my "militza" off over my head, I had humped up my

muffler and chin-guard around my right cheek, giving me a false view along the sights, and causing my bad shooting. I put this matter right, and as she wheeled round, having become alarmed by the barking of the dogs, I shot her in the hind-quarters, breaking her backbone low down, but she scrambled on, and as she slewed round at about seventy-five yards distance, I put a bullet through her heart and finished her. The cub, however, had cleared out, but hovered around in the distance for two hours, and then walked up to the body of his mother, when I gave him a shot through the head at about eighty yards. The she-bear was still suckling the cub, big as it was.

It is still blowing hard, snowing and driving, with thick mist, which partially lifted occasionally. We shall have to camp and wait till it is a little better. We had one of the kidneys, fried with bacon, of the bear I shot on the 30th inst. for breakfast. I took some of the meat for future use. Our latitude is $81^{\circ} 19' 30''$ N., longitude $5^{\circ} 18' 18''$ E. of Cape Flora ($54^{\circ} 55' 52''$ E.).

We had now reached a point a few miles to the northward of the spot where Nansen at the beginning of the following autumn arrived, and where he made his hut. We were fortunate in thus being the discoverers of this new country and of the sea to the north and north-west, which I named after our Queen—Queen Victoria Sea. The Cape* where Nansen erected his hut some months later lay to the south-east of us.

May 3rd, Friday.—Still snowing and blowing. Angry-looking water-sky to the east and north-west of us, suggesting strongly open water, and numerous birds are flying around us. Burgomasters† and ivory gulls are

* Named by me Cape Norway.

† Glaucous gulls.

feeding on the carcasses of the bears I shot, and many mollymokes are skimming across the ice.

Inside the tent everything is sopping wet, and the snow on the floes is also very moist. The gear on the sledges, owing to a small fall of temperature, is now frozen stiff and very difficult to handle. The tent is nearly snowed under, and looks like an Esquimaux igloo, and four of the sledges are completely hidden from sight in the drifts.

As the wind has decreased somewhat, although the falling snow and dense mist make the weather particularly vile and bad for travelling, I determined to make a move, as the longer we stay the worse the ice will get. So very regretfully we packed up to return southwards, although we had hoped to have got farther north.

After digging out the tent and the sledges, we packed up as best we could in a driving snowstorm, and started back for Cape McClintock (our camping-place of the 30th inst.), where I intend to make a *dépôt*, as being in a more direct line for our advance north next spring than our present position, for on May 1st we deviated to the north-north-east to avoid the boggy ice.

I am glad to find that our two remaining ponies draw their extra loads over the wet snow and deep drifts better than I had expected. I am afraid the high temperatures of late will prevent the cracks in the ice, caused by the spring tides, from freezing up again, and will thus further tend to disintegrate the ice. The sea to the north, I think, will be open in the summer, possibly sufficiently so for navigation. Markham Sound would probably be always blocked with ice, being so narrow. It may be possible in good seasons to reach here *via* Cape Lofley. If the *Windward* arrives in time in 1896, I should very

much like to take a trip north in her, as a great deal of good work could be done in her.

We again got into boggy snow before reaching Cape McClintock. This snow was quite sound when we passed over it on May 1, and shows the ice is getting worse rapidly. The weather attempted to clear about 6 P.M., and the wind became northerly with a fall of temperature, but the sky rapidly clouded up again and it continued snowing.

May 4th, Saturday.—Blowing freshly, with a heavy fall of snow, when we turned out at 6.30 A.M. We set to work to make a depôt in the cleft of Cape McClintock, leaving there nineteen small Jacks, 15 lbs. of bear meat, 11 lbs. of biscuit, 1 lb. of tea, 2 lbs. of butter, 1½ lbs. of cocoa, three tins of milk, three cheeses (12 lbs.), 8 lbs. of sausages, 21 lbs. of bacon.

I also placed a Jack on a prominent position on the northern side of the rock. We then packed up and got under weigh. We had not, however, gone a hundred yards before we sank above our knees into sloppy snow and water, with open cracks in the ice in all directions, and the ponies had to be dragged out by main force, and then the sledges afterwards. I found that by sticking close to the glacier face matters improved somewhat. I went on ahead, sounding the ice with my long spiked ice-axe, but in spite of all care the ponies constantly floundered in up to their necks, and we had great trouble in pulling them out. Often there was no choice of roads, the snow being boggy in every direction. The floes are breaking up fast, and we have not turned back a moment too soon. I hope to get the ponies back in safety, for they are essential to our success in the future.

A fresh gale from the north-east blowing, with thick driving snow and a dense mist, adds to our difficulties.

After proceeding about seven miles, and just past Cape Fisher, opposite our camp of April 30, I tried to strike straight across Brown Fjord* towards Cape Richthofen, by which we had come, but we were soon involved in numberless morasses and open cracks. Having pulled out the ponies by their heads, we got them on to a firm patch of snow. They would struggle desperately sometimes, poor brutes, and then becoming exhausted, lie down as if quite prepared to die. We gave them a feed as they were tired out, and made a pot of tea and had a little food ourselves. The gale is still raging, with fiercely driving snow, and the temperature is falling. I went on ahead as before, sounding, and by striking east up into the fjord and keeping nearer the land, managed to find a little sounder ice, but frequently the ponies floundered in up to their girths, and there lay until we pulled them out. Owing to the dense mist and driving snow, we were unable to see more than fifty yards ahead, and our horizon was bounded by a narrow misty circle.

At 10.15 P.M. we again got into very bad morasses, and the ponies, having become utterly exhausted, refused to move at all. So we stopped for an hour and fed them, and had some more tea—which is a splendid drink, a fine pick-me-up and friend—and some biscuit and butter. After which we again struck further east towards the land. At 12.30 A.M. we got on to ice with less snow on it, and crossed the small bay at the head of which our depôt and aluminium boat were deposited. I do not wish to touch anything, as the boat will be wanted here next year, and I hope now by making forced marches to get back before the ice necessitates a boat. We proceeded until 1.40 A.M., when we camped near the glacier

* So named by me after Captain Brown, the captain of the *Windward* in 1896 and 1897.

face to the south-west of the depôt. We had marched for twenty hours, and had travelled thirty miles, but not in a straight line unfortunately. The wind had become north-west and had cleared up the sky, the sun came out, and the snow stopped. This change is very welcome.

During the greater part of the day I had been obliged to steer by the direction of the wind, all land being shut out from view by the snow and dense mist.

May 5th, Sunday.—On turning out Armitage and I took observations for latitude, longitude and variation. We hitched up the ponies and started about 2 P.M.

The ice soon became very bad. Wide cracks were open in all directions, and opposite Cape Richthofen were so wide as to become uncrossable without a boat. To get round these I struck further in towards the land, where the ice was fearfully rough and heaped up. Before doing this, I had tried to cross a crack with the ponies, when the black one went through the ice, a large piece having broken off. Armitage was driving and I was ahead sounding. I instantly ran back and seizing the reins, kept his head above water when I saw him go through, for he appeared on the point of drowning, till Blomkvist came up, and the three of us managed to drag him out upon the ice after much pulling and hauling. It was a very near go for him and I certainly thought he would have been drowned. This has scared Mr. "Black" so much that he refuses now to budge an inch, expecting no doubt to go through again at the next step. To get on at all we harnessed the two ponies to one set of sledges, and by going three times over the same ground managed to round the Cape and get clear of the villanous, sloppy, hummocky ice near it, and got on to smoother and firmer ice. Travelling in the Arctic is a fine trial of one's temper, and enough to ruffle a Job.

The crack where the black pony went through was about two feet wide and the ice four inches thick, and further out from shore widened to about forty inches. In spite of the trouble with the ponies at times they are really invaluable, and I am thoroughly satisfied with my experiment of bringing them up here.

We stopped at midnight for a pot of tea and a little food, and then proceeded until 3 A.M. The temperature is again at 10° below zero, and our clothes and gear as stiff as sheet iron.

I took bearings twice to-day and made sketches of the land in sight. To-day has been clear and fine—a pleasant change from the utterly vile weather we have had for so long. A long wide strait runs nearly South out of Allen Young Sound * and into De Bruyne Sound, cutting up Hooker Island, this I have named Smithson Channel, after the energetic secretary of the Tyneside Geographical Society. From the Austria Sound end of Markham Sound a fjord runs nearly south-east in the direction of the north point of Brady Island or Aberdare Channel, and it may be the northern entrance of Aberdare Channel.

After camping at 3 A.M. I again took a round of bearings and made sketches of the coast lines. We travelled in all about twenty miles to-day. The whole sea west, north-west and north appeared to be covered with similar ice, but with deeper snow. The current apparently flows to the south-east round the Cape, and heavy ice is crushed against it.

May 6th, Monday.—Armitage and I took observations for latitude and longitude after turning out. The weather still clear and sunny. What a difference it makes to our spirits—and we seem to be able to do

* Named by me after Captain Sir Allen Young.

twice as much. The snow has a weak crust upon it which breaks at every step. On entering the southern portion of Robert Peel Sound, we came upon very heavy hummocky ice with deep snow drifts, at the bottom of which the sea had forced its way through cracks. Into these the ponies were soon floundering again, and we had to resort to the hauling out by the neck process to extricate them; we got as wet as on previous days. I stopped several times to take bearings and make sketches of the coast lines. As I could see last night Smithson Channel runs nearly south out of Allen Young Sound into De Bruyne Sound to the east of our first depôt made on March 13th, reducing Hooker Island to about half its size on the maps, and near the northern entrance another fjord runs east towards Brady Island and Aberdare Channel. The whole coast line is studded with numerous high, basaltic cliffs, except upon what is probably an island to the west of us, where the coast is one rounded-off glacier edge on the eastern side, excepting for an isolated columnar basaltic cliff, about one hundred and fifty feet high, which juts out of the ice near the entrance to the strait.

The land on this side is comparatively low. We camped at 3 A.M. about a quarter of a mile to the south-east of the columnar rock (bearing 306° magnetic from our camp). After having turned in for an hour two bears approached the tent, and the barking of our two dogs "Sammy" and "Sally" awoke us. It was blowing a strong breeze from the north with thick driving snow, so that when I tumbled out with my rifle I could hardly see them. They however disappeared without my firing and troubled us no more, allowing us to sleep in peace.

We travelled altogether to-day about twenty miles.

May 7th, Tuesday.—Before leaving camp we took

observations for latitude and longitude under very disadvantageous circumstances, as the wind was still strong and the snow was driving. I was however, very anxious if possible to get a position fixed by observation here.

Cape Albert Markham to the north of Scott Keltie Island bears 107° magnetic from the camp.

We started towards the south-west point of the latter island over a level but a very boggy floe, and we were soon at the old entertainment of dragging the ponies out by the neck and the sledges afterwards; and are constantly wading about in a filthy mixture of snow and water above our knees. Open cracks run in all directions letting the water through, and the weak crust which the last two days has borne us, at least partially, has disappeared and now lets us through at every step. Near icebergs or large hummocks the ice is particularly bad, and the floes are beginning to take on a smallpox-like appearance. In another week these floes would have been impassable for the ponies, and possibly after another gale for ourselves too. Both Armitage and Blomkvist are affected very much with snow blindness, and when we camped at 5 A.M. I too was slightly. I have walked ahead all day sounding with my long ice-axe to pick the best way for the others to follow with the ponies.

The light all day has been vilely misty rendering it impossible to clearly see the snow at one's feet, and one stumbles on over rises and depressions like a person blindfolded, without being able to distinguish the difference, owing to the total absence of shadow or colour. I think snow blindness depends less upon the fierceness of the sun's glare than upon the intense whiteness of everything around. We look frightful ruffians with our faces covered with scars caused by the combined effects of the

sun's rays and the cold, and they are very sensitive to cold winds. We appear shocking jail-birds in appearance.

We travelled thirteen hours, having stopped once for three quarters of an hour to have some tea, cheese, and biscuit, and to feed and rest the ponies. We must get on, or with the ice breaking up like this the ponies never will reach Cape Flora.

Camped off the south-west point of the island, having travelled about twenty-three miles altogether. Our feet and legs have been sopping wet all day as usual. I think if there was much rheumatism in our constitutions this would bring it out, for without a fire it is impossible to dry soaking wet things. The temperature has been within a degree or two of zero Farenheit all day.

May 8th, Wednesday.—There were only thirteen degrees of frost when we turned out at 3 P.M. The weather is still very misty, and light snow is falling.

Our eyes are better for a sleep, but I insist upon Armitage and Blomkvist wearing goggles. As I have to go ahead to pick a road, I find I cannot do this with glasses on, and soon have to take them off. Soon after starting our troubles with the morasses began anew. A small sack of oats was discovered to have fallen off the sledges, which I sent Blomkvist for. He, however, returned without it, and I had a two miles walk back before I found it. It was too precious to lose. The ponies have been floundering into deep wet drifts every twenty yards, and often less, necessitating our dragging them out by the neck, as usual. They are getting quite played out, and the black especially has quite given in, and can only be got to move by very energetic measures on our part. The hummocks to-day have been very high and close together with deep snow and the bogs are worse than

ever. Finally the black pony was taken with violent bleeding at the nose, which I stopped with great difficulty by cramming snow and waste up the nostrils. He was weak enough to begin with, so I am afraid this won't improve matters. I gave him three ounces of spirit sixty over proof to pull him together, but as he would not budge an inch—not from being drunk and incapable—I had to camp, which we did at 5 A.M.

We find that in the dense mist we have approached near the coast of a low, flat island (Eaton Island probably) about a mile long. I tried leather boots—my furs are so awfully rotten from wet—but got both heels raw from blisters. Our feet have been in a state of poultice for days from our wet boots, and this, and from not having worn any but fur boots since last October, make our feet a bit soft.

We were eleven hours actually marching, and covered five miles direct.

May 9th, Thursday.—We started again at 6 P.M., and began by harnessing the two ponies in one set of sledges, taking them on for a mile, and then returning for the second lot. Constantly we had both down together in the morass-like snow, where they would lie and refuse to try and extricate themselves, and we had to drag them out singly with lines round their necks, the process being again repeated after going another ten yards. They at last got so fagged out by this kind of thing that there was nothing for it but to drag the six sledges ourselves, which we did for some time, taking them on by instalments, until we got on to somewhat better snow. We had frequently to go thirteen times over the same ground to get them forward.

About 4 A.M. we reached the shoal-like island along which we travelled, as the snow was a good deal

firmer on the land. It is about a mile long, half a mile broad, and from fifty to sixty feet high at the highest or northern end. The mist prevents us seeing anything more than two hundred yards off. I went on ahead trying to pick a way, but there is little choice as all the snow is deep and soft with water under it. Occasionally, where the hummocks are fewer, there is harder snow, over which we go better. The ponies are quite played out, especially the black, and both frequently throw themselves down and refuse to move. We struggled on till 6 P.M., when we camped about three miles from the island. It is a race against time.

I have got very snow blind, as I cannot wear goggles when picking a way, which I have to do during the march. I put them on as soon as we stop. I can hardly see at all now. Armitage and Blomkvist are now very much better. Snow-blindness is an inflammation of the conjunctiva, which becomes red and swollen. Tears stream from the eyes down the cheeks, and an intense smarting and aching sensation is felt, and sight is difficult. A weak solution of sulphate of zinc is the best remedy, and cocaine discs placed in the eyes to relieve the pain are useful for this purpose. The eyes must be protected from light for any remedy to be effective.

CHAPTER XII

A SUCCESSFUL RACE AGAINST TIME

May 10th, 1895, Friday.—We took observations for latitude and longitude at 8 A.M., after arriving at camp, before turning in, and turned out again at 11.30 A.M. to take a meridian altitude for latitude. We then slept until 4.30 P.M., when we again took observations for longitude to mean those taken at 8 A.M. We find our position to be lat. $80^{\circ} 18' 58''$ N., long. $50^{\circ} 41' 43''$ E. ($1^{\circ} 24' 16''$ E. of Cape Flora).

Armitage took bearings, as the mist had considerably lifted. I am absurdly blind, and can hardly take the times on the watch for the observations. I mistook a berg sixty yards off for land fifteen miles away, and felt annoyed with Armitage that he could not see it too, so difficult was I to convince that my sight was so defective, and it was some time before it struck him that it was the berg close to that I was looking at. From our camp Eaton Island bore 354° . Western extreme of Scott Keltie Island, 39° ; eastern extreme of Scott Keltie Island, 36° ; Cape Flora, $196\frac{1}{2}^{\circ}$; Cape Gertrude, $189\frac{1}{2}^{\circ}$; Windward Island, 213° .

Bell and Mabel Islands, Armitage tells me, are so covered with mist as to be doubtfully recognisable. Windward Island is also uncertain.

We started south-west about 7 P.M., with a strong breeze from south-east, causing a good deal of snow driving. I started again to try and pick a way, but

found I was too blind to do so, and exchanged places with Armitage. I tried some empty oat-bags with hay in the bottom as snow-shoes for the ponies, and found that they much helped to keep them up. After going a mile or two the snow became firmer below the surface, and we got on faster, having gone about eight miles south-west. We changed our course to S.S.W. to hit the coast of Northbrook Island at Camp Point.

The south-east breeze had now increased to a fresh gale, with a heavy fall of snow, fiercely driving, rendering it impossible to see more than fifty yards ahead, and as the temperature keeps unusually low for a wind from this direction, after the high temperatures we have had, frost-bitten faces are again in fashion, making marching rather unpleasant.

After proceeding another eight or nine miles we suddenly saw land close ahead, which we recognised as Camp Point, and immediately afterwards came upon the doctor's sledge tracks, outward bound, and the marks of three men walking beside the sledge. We camped close to the point at 6.30 A.M. The gale lulled for an hour, and blew in hard gusts of wind from all round the compass while we put up our tent, and it looked for a short time as if the weather would clear, but it came on as bad as ever soon afterwards.

We had a big feed, to celebrate our near return to the hut and the tolerable certainty now of being able to get the ponies back. This is an immense relief to me, as they are essential to our success here.

May 11th, Saturday.—We turned out about 3 P.M., and found the weather worse than ever, the tent half full of snow, and ourselves overspread with a thick covering of it. After having breakfast I decided to

wait for it to clear up a little, as the strong gale and dense driving snow renders marching rather difficult. The sledges, tent, &c., were nearly buried out of sight, and one could not see more than twenty yards in any direction. So we remained in the tent smoking and amusing ourselves as best we could, and occasionally tapping the aneroid in the hopes of seeing it rise. Our fast-rotting furs are causing odours not exactly resembling those of Araby. There we sat until 8 A.M. of the 12th, when it began to look more like clearing, so we had a second breakfast of oatmeal to get even with the day and ready to start. It, however, came on again and blew and snowed as hard as ever.

May 12th, Sunday.—A 1 P.M. the wind moderated a little, so after digging out the tent and sledges we packed up and started for the hut down Miers Channel. This daily digging out process is a great hindrance, as we often have to spend hours at this sort of work before we can start at all.

We had not gone far before we had both ponies down and floundering in morasses of slushy snow, and the old entertainment of hauling them out by the neck began again. We found the extemporised snow-shoes useful, but they did not always prevent them from sinking.

To avoid the boggy floes as much as possible, I decided to strike across the bay and make directly towards Shell Gully and over the glacier, instead of going round the point of Cape Flora, as I felt sure the ice would become worse as we approached the point. After this matters improved, for although the snow on the glacier was deep, making it heavy going, it was a great improvement on the boggy morasses of the floes.

When coming down the glacier slope opposite Windy Gully a reindeer-sledge took charge, ran away, finally overturned, and smashed an upright. We removed the load from it to another sledge and left it to be fetched another day. On reaching the hut we found only two of the party there. The doctor, taking with him Child and Heyward, had left exactly a week previously with ten days' rations, to carry out my orders of removing the boat and stores from the first dépôt made to the one near Dundee Point and to make scientific examinations on Hooker Island, had not yet returned. Bad weather had detained them at headquarters after their return from Robert Peel Sound.

A great many of the large, low, flat-topped bergs we have met with while sledging correspond exactly with Sir George Nares's and Dr. Moss's description of the so-called "floebergs" and "paleocrystic" ice floes seen by them, both as to their formation and even to their partial salinity due to the wash of the sea. The "ship berg" was found so salt that we gave up using it, and sledged glacier ice from the land instead.

On many occasions I have noticed glacier faces with the peculiar stratification of the ice spoken of by Dr. Moss as occurring in "floebergs."

The ship still lies quite safe, and a quarter of a mile of fast ice is outside of her to seaward. There is, however very little open water—only a few streams. All the sea from a quarter to half a mile from the land is full of loose driving pack. They have had nothing but one gale after another, with snow, since our departure, and much the same weather as we experienced further north, except that we appear to have had it rather worse than they did. Fisher tells me that they have had worse weather since the 16th of April than any

they have experienced since reaching Franz Josef Land.

Two of the bear cubs, "Mabel" and "Gertie," have died. They did well when we had them at the hut. "Benjy" does not look flourishing. Another cub has been taken on the talus here and is going on well. Perhaps this one will get home to the Zoo. Mouatt is better.

We reached Cape Flora at 1 A.M. on the 13th. Much

A LOADED SLEDGE

of the snow has disappeared from Cape Gertrude, from evaporation no doubt, and by being blown away by the heavy and constant gales.

The results of our journey are :

That we have entirely altered the map of Franz Josef Land, discovering islands and seas where terra firma has been laid down ; have been able to discover the most northern sea in the eastern Polar area, and to name it after our Queen—Queen Victoria Sea.

We have discovered an entirely new, and from Cape Flora, a more direct route north, all of which we have mapped with all care, fixing the positions by means of observations for latitude and longitude, and determined the variation at six different positions.

We discovered at least two hundred and seventy miles (geographical) of new coast lines.

We have conveyed north two boats, leaving them in positions where they are likely to be required in the future, and have made three depôts to aid our next advance.

We have proved the utility of horses for sledging here, and have gained very valuable experience as to the state of the ice and the weather in the spring in this part of the world.

The conclusions I have come to as a result of our journey are :

That the ice breaks up north at an unusually early date, probably due to the perpetual gales during the second half of April and May.

That the high gales sweeping down off the land had kept parts of the sea open until after Christmas—such as in the neighbourhood of Dundee Point and the entrance (south-west) to Markham Sound, and that there is probably open water off Cape Fligely all the year round off and on.

That most of the ice we travelled over clears out every summer, possibly, and even probably, rendering those seas navigable, but Markham Sound, being narrow, would no doubt cause a block of ice there.

That ponies cannot be out after April 30 without a risk of being cut off.

That the advance to and retreat from the Pole must be made during March, April, and May.

That ponies are *the* means of getting north.

That only a driving pack (open water) will stop us reaching a high latitude with a good supply of horses and luck.

That at least six horses are required and *good* ones. I am asking for more to be sent out to me by the *Windward* in 1896.

CHAPTER XIII

BACK FROM THE SLEDGE JOURNEY, 1895

May 14th, Tuesday.—Arrived back at the hut at 1 A.M. this morning. Got a bad cold from sleeping in pyjamas and blankets which had got very damp in my absence. My cabin also is very damp, the boards wet, and the walls covered with mildew.

We had been looking forward to the comparative luxury of the hut after our recent experiences sledging—change of food, warmth, clean clothes and, above all, a bath. On our arrival, however, our spirits were a trifle damped by finding the occupants asleep, no fire in the stove, our clothing very damp, and no food cooked. We set to work, however, and soon remedied some of these defects, which were due to the hour of our return. Fisher and Burgess gave us a hearty welcome, and bustled about to make us as comfortable as the circumstances would allow. Our appetites are enormous, and will continue so for a week or nine days after our return to the hut. A “sledging appetite” became proverbial amongst us as being the largest thing in appetites known.

May 15th, Wednesday.—The doctor and his party arrived back at 7.30 A.M. after being away a week, having met with very bad weather, and in some places boggy floes, but having come farther from the east than we did, travelled over better and sounder ice. On meeting with boggy places, however, they left two sledges with a seal's skin and other things upon them about seven miles

beyond Camp Point (twenty-one miles from here) buried in a snow-bank close to the "Church Berg" (a berg much resembling a church), and came on with only one sledge, Child and Heyward using their "rueraddies" to keep the pony out of the boggy holes.

May 17th, Friday.—The doctor reports to me that there is another case of scurvy on board the *Windward*, which is still here. A man who has had symptoms for several days showed his legs to him to-day. As he came up for medicine at 6 P.M. I examined his legs and gums, which bear unmistakable scurvy symptoms. He looks anæmic, is fairly well, but has no appetite. I had him stay for dinner here to ensure his having fresh meat to-day. I afterwards went up the talus to shoot birds for the ship, but only got twelve looms.

May 19th, Sunday.—The doctor and Child, taking a team of eight dogs with one sledge and eight days' provisions, to provide against any possible detention, left about 8.30 P.M. to fetch in the sledges left behind. They should be back in three days with good weather. The sky, however, looks threatening.

As I noticed the looms flying in in large numbers from the sea and keeping low, I took my gun and, accompanied by Burgess and Fisher, took my stand a short way up the talus to the eastwards in the hopes of killing a few for the ship. The looms were evidently making for the land for shelter in view of the coming bad weather. In three hours I had bagged eighty-three (Burgess killed eleven of them), and had lost at least twenty more through their falling at a distance among the hummocks on the floe, where we often failed to find them.

It began to blow from east-south-east with heavy snow before we finished.

May 21st, Tuesday.—Blowing and snowing all day.

The doctor and Child are not enjoying themselves, I fear. May has given us the worst weather we have had since our arrival here, and has been the stormiest month. It has little resemblance to the weather associated with the month of May at home.

Weather: At 8 A.M. strong wind to moderate N.W. gale. At noon moderate gale. At 4 P.M. fresh N.W. wind. At 8 P.M. fresh to strong wind. Snow driving thickly throughout. Cloudy, misty weather.

May 25th, Saturday.—After dinner I went up the talus accompanied by Fisher and Heyward, who undertook to act as retrievers, and shot twenty-five looms which I intend to send to the ship.

From the top of the talus, 600 ft. above the sea, no ice whatever could be seen in any direction stretching from east through south to west. A little land ice hung off Bell Island and Cape Grant, but only open water could be seen beyond. I could see for a distance of quite thirty miles. The evening was quite clear—the first we have had for some time.

Weather: At 8 A.M. moderate N.E. wind. At noon gentle N.N.W. wind. At 4 P.M. light airs and winds from S.W. At 8 P.M. variable winds in force and direction. Fine but cloudy weather. No ice to be seen from altitude of six hundred feet to S.E., S., S.W., and W.

May 27th, Monday.—The doctor and Child returned this morning about 11.30 A.M. with the sledge and seal-skin. They had been obliged to camp for four days owing to the bad weather. The floes had become worse, but having dogs they could as a rule get along fairly well. Eight dogs, however, on hard snow will not do the work of one pony or go along as fast. Dogs are preferable over rotten ice, as, being less heavy, they don't go through so easily.

The seal the doctor got is a "harp" (male). It had a hole in the ice near a tide crack with water in it, about

three hundred yards from the shore of the old depôt on Hooker Island near a grounded berg, and the nearest open water so far as we know is off Cape Barents (twenty miles off) and the south coast of Northbrook Island. It was in rather poor condition, with only about three-quarters of an inch of blubber upon it.

Seals are anything but plentiful here, especially the "harp," and we have seen very few indeed since we arrived. The commonest species is the ringed seal or "floe-rat" of the Scotch whalers. These are very wary, and can seldom be shot on the ice. They are, however, easily approached in the water, but on being shot dead generally sink.

May 29th, Wednesday.—At 8 A.M. the dogs began to bark furiously. Armitage ran out, and returned in a few moments reporting that a large bear was on the point of going for "Räwing" and "Sammy," who were tied up outside. He took the Government .303 rifle, and succeeded in killing it when on the point of seizing "Räwing;" "Sammy" had managed to break his chain.

During the morning looms were seen to be coming in from seaward and flying fairly low. I took my gun and, accompanied by the doctor and Fisher, climbed up the talus. In about two and a half hours I had bagged fifty-two; so our larder is looking up again. I sent most of these to the ship for the scurvy patients. I have enjoined the greatest care with regard to the food used on board the *Windward*.

May 30th, Thursday.—Blomkvist, Maxim and I removed a portion of the roof and found a quantity of snow between it and the ceiling (caused by condensation and being driven in through cracks between the boards). This we removed, and relieved the dripping condition of the interior of the hut, which was very uncomfortable, as

A HARP SEAL (MARE)

water was leaking through the ceiling at a dozen different places from the thawing snow and ice beneath the roof, spoiling everything and making the room below exceedingly damp. We got out a tarpaulin, which I mean to have battened down on the roof to keep out rain should it fall later on.

The others were engaged in various jobs. Fisher has planted some mustard and cress in a box, which he has placed on the south side of the house during a portion of the day when there is any sun, and which he hopes may grow. It took many days, and much care and trouble, to attain the height of an inch and a half, and then was devoured by us at one meal.

Bay-ice and very light drift-ice now occupy the whole space which was open water a short time ago.

Weather: Calm at 8 A.M. Light airs and winds from S. and S.S.W. the rest of the day. Overcast cloudy weather throughout. Thawing rapidly and water standing in puddles.

May 31st, Friday.—About 4 P.M. a sailor came up to the hut and reported a bear. Armitage and I went out and climbed the floe-berg at the point, and saw him leisurely walking along the edge of the floe under the cliff slope, which he soon afterwards ascended towards the hut. I, however, met him at the top, and a shot from my .303 rifle settled him. He had at first approached the ship, and one of the men had blazed at him twice and missed.

June 1st, Saturday.—Shot a glaucous gull, weight 4 lbs. ; stretch of wing, 5 ft. 2 in. ; length of body from back to tail feathers, 2 ft. 6 in. It was a hen bird. I also shot an Ivory gull.

Armitage engaged in magnetic observations with the "dip circle."

Weather : Gentle N.W.N. wind throughout the day. Overcast and cloudy weather with mist at times.

A quantity of young ice away to the westward.

June 5th, Wednesday.—Writing letters. Some of the Expedition engaged in digging out No. 4 hut.

Fisher obtained some annelids and shrimps to-day. Pools of water an inch and a half deep between the mosses.

Weather : At 8 A.M. calm. At noon and 4 P.M. light W.N.W. airs. At 8 P.M. calm and light airs from S.W. Overcast, foggy weather throughout.

June 7th, Friday.—Found a last year's bunting's egg on a piece of moss attached to a lichen, which is now soft and free from frost, under which a grub was found. I shot eleven looms, three kittiwakes, and a burgomaster gull. We noticed kittiwakes carrying moss in their beaks, evidently to build their nests with.

June 8th, Saturday.—Went out to kill looms, but none were in flight. I shot a species of tringa, which I believe is the purple sandpiper. Fired at two brent geese at midnight flying east.

Weather : At 8 A.M. gentle E.S.E. wind. At noon calms and light E. airs. At 4 P.M. light S.E. airs. At 8 P.M. gentle S.E. wind.

Overcast with thick fog throughout the day. Three hours thick snow between 8 A.M. and 8 P.M. This is our summer weather !

June 9th, Sunday.—Two dogs broke loose during the night, and murdered poor "Peter." He was found quite dead this morning.

The looms getting shy, and begin to know us. I shot a mollymoke near Leigh Smith's hut.

Weather : Gentle E.S.E. wind throughout the day. Overcast with thick mist throughout the day, and raw and cold. Verily the joys of summer !

June 10th, Monday.—Armitage shot two geese on the pond at 3 A.M. The Expedition amused themselves with

target-shooting at 200 yards. A rifle shooting match in the evening between Child and the doctor. The latter won.

Armitage and I walked down to the ship, and while there a bear approached. I disabled her with a shot through the neck behind the left ear, which went through and out again. "Slop" fired at her, and once more made a mess of it. I put a solid .303 through both shoulders, breaking both, as the shot in the neck was not immediately fatal, and she was trying to make off. A third shot in the neck completely quieted her. A partly digested seal and a loom was found in the stomach. Shot three tringas later on.

Weather: Light winds and airs from E.S.E. till 4 P.M. Calm the remainder of the day. Overcast, cloudy, misty weather throughout. The sun shining through mist at times. The snow in drifts fast melting.

June 11th, Tuesday.—Sunding is daily improving. Mouatt now rambles in his talk at night, and imagines he cannot sleep without morphia, which the doctor several times has given him. I am feeling very anxious about him. His heart is becoming affected, and the dropsical condition is increasing. He is very depressed and says he has no desire to get well, poor old man. I fear he won't. His age is against him.

June 12th, Wednesday.—One of my men and I took our guns and walked west to look for the geese, which we saw yesterday. After dinner we went up the talus and knocked over twenty-six looms between us. Snowing heavily all the time. Heyward slipped down the talus with my gun in his hand, which he much damaged—scoring the stock and denting the barrel. He tried his best to save it and got damaged himself through his efforts.

We have been engaged in sawing out the ship all

day with the large 12-foot saw, which is suspended on shear legs and worked by seven men. Lines running through a block being attached to the upper portion of

the saw to raise it. It is forced down again by its own weight and by two men bearing upon a bar fixed across it at its upper end. It cuts very slowly the 10 feet of ice around the ship—about a foot in half an hour, and rubbish

thrown over the side of the ship and frozen into the ice much hampers us. A large quantity of bay-ice has been forced under her to the depth of ten feet, so she lies in an icy cradle. To-day she slipped a foot away from the berg on the port-bow against which she appears to hold. The ice to the south is very light, and she could get away easily enough if at the water's edge. A good strong blow from the north would clear all the ice out and set her free at once. The land-floes are very sloppy, with wide open cracks and are dangerous to walk upon. It will soon be difficult to reach the ship. We are all using our long sea boots now.

June 17th, Monday.—The doctor visited Mouatt this morning and found him dead. Petersen had spoken to him at 3 A.M., and had given him some cocoa, when he went to sleep. The skipper had visited him at 9 A.M. when he appeared to be asleep. Poor chap, his trials and troubles are ended. His hopes and fears are done. He has looked for the last time upon that cold desolate waste of ice and snow which has been our home for so long, and the grave in that white, silent land of the north will soon be the only memorial of our late comrade, who has aided us in the acquisition of knowledge, and in carrying our flag into the unknown. He was sewn up in a blanket, and the carpenter set to work to make a coffin. Several hands were directed to dig a grave a hundred and fifty yards behind the hut at the foot of the talus close to a stream of thaw-water. The ground was very hard, frozen a few inches below the surface, and picks and crowbars had to be used on the icy soil to make any impression on it. They worked hard, and no one spoke a word, each feeling probably how he himself might have been the one to be laid to rest in that silent cold grave in the Arctic.

June 18th, Tuesday.—The crew at work at the stern of the ship with the ice saw where the ice is weakest. Crowther and I thoroughly examined the ice between the ship and the water and found it very heavy with high hummocks, and offering no chance of cutting a way through it. There is about three quarters of a mile of ice outside of the ship. It will break up in time no doubt if a swell comes in, and when the sun begins to affect it strongly.

Mouatt was buried to-day. His coffin was conveyed up from the ship on a sledge with the Union Jack covering it, by the crew. All the expedition met it at the top of the slope, and we fell into couples behind the sledge. Poor Mouatt! We did all we could to do him honour. The sledge was drawn by his shipmates, and there was something very sad as it glided over the ice-bound land. I walked behind with the captain followed by the land party and the crew. When we reached the grave we grouped around it with bared heads and the doctor read the burial service. On the body being lowered, some of us threw in snow and frozen soil. The sight was a very pathetic one.

June 19th, Wednesday.—We have been at work sawing round the ship. I went up the talus in the evening and shot a few looms. When returning I saw a bear out on the ice. When on the talus I heard shots in the direction of the ship. I ran to the hut to get my .303 rifle and met two of my party who had previously fired at him but at a long range. I let loose "Räwing" and "Sammy" and put them on the bear's track, and they entertained him until we were able to get within about a hundred yards of him, past which there was no cover in the way of hummocks. A shot or two from us knocked him over, but unfortunately he fell through the

SAWING OUT THE SHIP

ice, which was very rotten. We had to defer his removal till next day as it requires a boat to get him.

June 20th, Thursday.—After breakfast all of us started off with a sledge and the 12-foot Norwegian boat to get the bear that we had shot at midnight yesterday. I sent for "John" from the ship to go with us and to help with the skinning. We got the bear out of the hole after some trouble and skinned him on the ice. The floe is in a very wet condition, and we waded through water half way up to our knees a great part of the way.

The ice immediately astern of the ship is thinner than that on the port side, being ice formed since April 4. It was on this side we killed the bear.

We have been busily engaged in cutting round the ship. Wherever we don't want water, it is to be found, but round the ship many days of hard work seem to have made comparatively small impression.

June 21st, Friday.—I again examined the ice from the water's edge to the ship all round. No cracks are noticeable. A swell or a strong gale from the northward would probably break it up. Sawing out is proceeding.

June 22nd, Saturday.—Yesterday was the longest day. People at home are basking in the gardens, lying in hammocks, boating on the river, lounging about in the parks or amusing themselves at Hurlingham and Ranelagh—while we are living in a world of ice and summer slush! One day is much the same as another, and as days and weeks pass there is little or nothing to break the dead monotony. An occasional bear is the only thing that does so. Here the sun is rapidly decaying the ice, and the bay floe to the south of the ship is hardly safe to walk over.

June 24th, Monday.—Six of us walked over the floe to

Cape Gertrude. We found it very fearful walking as we went without snow-shoes thinking that the ice was sounder and better. The snow has a crust upon it which bears one for half a second and then lets one down suddenly up to the thighs, and sometimes to the hips with a sudden jerk into soft snow with a foot of water at the bottom of it. Coming back it was still worse, as the frost, after the sun had got low, made the crust a little harder, but not sufficiently so to bear us. It played havoc with our long leather boots. No boots suit this kind of going, fur ones are impossible, and any kind of leather ones are cut to pieces.

We found Cape Gertrude an exceedingly barren spot with very little vegetation upon it. A sandstone stratum with a thin seam of black lignite and fossils shows half way up the talus underneath the basalt. Armitage shot a drake eider duck, and I killed the duck after a lot of trouble as it flew, badly wounded, about a mile on to the villainous floe we had been wading over, and on my approaching it again flew a long way. I however, eventually got within shot of it again, after wading through water and sloppy snow above my knees for about two miles. They did not appear to be nesting.

June 25th, Tuesday.—The ice around the ship shows further signs of breaking up. Sawing is still progressing slowly, as the ice is very thick and the amount of rubbish in the shape of empty meat tins, cinders, etc., which have been thrown over the side during the winter, and which have become frozen into ice, hinders, and sometimes stops work. An old furnace bar was one of the little impediments that were met with to-day.

June 27th, Thursday.—A lane of water has opened up about three hundred yards astern of the ship. We can now see our way to get her free.

OUR SETTLEMENT ON JUNE 21, 1895

VOL. 1.

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I took six of the members of the Expedition down and manned the long saw on the starboard side, with Crowther and three of the crew. The rest of the men worked a shorter one in the thinner ice astern of the ship.

We cut parallel to the ship through ice about eight to ten feet thick as far as the fore rigging.

At 8 P.M. Blomkvist ran into the hut to tell me that a bear was near the ship. I started out with my .303 rifle followed by Armitage. I came upon him unexpectedly close to the flagstaff and killed him with one shot in the neck. He was a good sized he-bear and measured: Length along the belly 8 ft.; length along the back 7 ft. 8 in.; girth of chest 6 ft. 1 in.; girth of belly 6 ft. 5 in.

June 28th, Friday.—I took my chaps down to the ship again directly after breakfast, and we went on sawing with Crowther and three of the crew. A hole was blown in the ice with a charge of about two pounds of blasting powder in a bottle by means of a fuze. A hole of about five inches in diameter was bored into the ice to a depth of about four feet, a bottle containing the powder with a fuze attached is then lowered into it. The hole in the ice above it is tightly rammed with stones, &c. We placed the mine just in a line with the "cut water" to enable us to insert the saw in the hole, and then worked back to our cut of yesterday.

The doctor and "John" have been employed in skinning and weighing the bear shot yesterday. They divided it up and weighed each part upon a Salter's spring balance scaling up to 220 lbs. The total weight came to 808½ lbs., allowing fourteen pounds for fluids (blood, &c.) lost.

A clear channel between the ship and the open water was completed to-day, and we connected our cuts of

yesterday. A good deal of ice was sawn away on the star-board side abaft the funnel.

The ship now only hangs in the ice from abreast of the main hatch on the port side away round the bows to within a yard or two on the starboard side of the cut water. On being cut all round she will come away I think.

I hope to have the ship off in a day or two now.

June 29th, Saturday.—I went down to the ship at 8.30 A.M. to see how things are progressing. We worked at the ice on the port bow all day blasting and sawing.

Cleared away all the ice on the port side abaft of the fore rigging. The shots fired to-day shook off much of the ice that was adhering to her sides.

I went up the talus in the evening accompanied by Armitage and Burgess, to the latter I lent my gun to enable him to shoot. We killed thirty-five looms which I sent to the ship for use on the voyage home.

As Blomkvist and Child had got forty-two looms' and kittiwakes' eggs yesterday we had some scrambled for breakfast. Some, however, were too much sat upon to be eaten, not that we were very particular, as eggs even with a small chicken in, are not to be despised in this part of the world, but those too much supplied with feathers we did reject.

July 1st, Monday.—I put the mails on board this morning, sewn up in strong canvas bags, sealed and soldered up in a biscuit tin and covered that with thick brown paper. This I placed in my cabin.

A strong swell is coming in from the south-east, which is rapidly breaking up the land-ice. Gunter Sound and Miers Channel are now open. Eira Harbour is blocked with heavy winter ice, and a land-floe extends from it for some distance to the eastward.

NEARLY FREE

The doctor, Fisher, and Child left for Cape Gertrude at midnight, taking a sledge with a week's provisions to collect firewood into heaps for removal later on, and to investigate further the geological formation and to botanize there. The sledge load weighs about 300 lbs. They took "Räwing" and "Carlo" with them.

July 2nd, Tuesday.—All the ice is now broken up to the seaward of the ship. She is now only held at the bows.

On going down to the ship late in the evening I found that arguments were in progress among the officers as to the best method of freeing the ship. Had a kedge put out on the ice astern and hauled tight with the winch, and an ice anchor on the starboard quarter removed, as it was jamming the ice in the cuts made by the saw.

July 3rd, Wednesday.—At 1.45 A.M. the skipper called me to tell me that the ship was clear and ready to start. "Could he get things he required and go?"

I sent down to the ship a large quantity of flour, sugar, five gallons of paraffin, and some boxes of matches, for they have long been out of all these things, and our own stores have been much called upon. The sugar is a full ration for a month, and there is plenty of molasses and flour for six weeks and three days. I gave the skipper after he had completed the soundings the ship's chronometer carefully rated.

The *Windward* steamed away at 3 A.M., amid cheers from the five of us at the hut. We dipped three times what remains of the Jack at the flagstaff which has been blown to ribbons. The *Windward* replied to our cheers by answering cheers, and dipped her ensign, and slowly disappeared in the distance. How we envied her! We turned in again till 9.30 A.M., when a dense mist obscured our view to seaward, but which cleared up about 2 P.M., when no signs of the ship were to be

seen. The *Windward* getting off is an immense relief to me; and that only one of the thirty-two men should have died. Sunding, however, certainly has scurvy.

I went up to the top of the talus about 5 P.M. to shoot a few looms for the larder. There was then no sign of the ship or of any ice at all to the south. I could see about thirty miles.

THE "WINDWARD" DEPARTING, JULY 3, 1895

Eira Harbour is still blocked with ice of a very heavy character, and a land floe extends across the eastern end of it to about a mile or more to seaward.

We are engaged in painting our whale boat and in making preparations for our boat journey west, which, now that the ship is away and the ice broken up to near the shore, we can start upon. On examining our boat, by scraping the paint off, I find that she is very old and many of her timbers are quite rotten, I fear she will prove very heavy after she has been in the water. The other

MEMBERS OF THE EXPEDITION, JULY 1892

three boats on board the *Windward* are no better, and the carpenter is supposed to have selected the best boat for us, as our very lives depend upon her being seaworthy.

July 4th, Thursday.—After lunch I cleared a road through the boulders which cover the plateau to get the boat down the snow slope to the water's edge. I saw two eider ducks (drake and duck) in the sea near the shore, and went after them in the twelve-foot Norwegian boat, but they were very wild, and only gave me long shots at sixty yards.

This is the first summer-like day we have had. The thermometer is eight degrees above freezing-point (40° F.) and altogether we feel as if it were really midsummer, although one would consider such a temperature rather wintry at home. People at Hurlingham or on the river to-day, I fancy, would think so. I found two flasks (tin) of gunpowder in Eira Cottage in very good condition, although they were standing in water. They were, of course, frozen into ice for nine months out of the twelve, but had been there thirteen years.

July 7th, Sunday.—The doctor, Fisher, and Child returned from Cape Gertrude about 11 P.M. this evening, and we gave them a hand to get their sledge up to the hut. They had found the glacier and the floe very bad travelling, and without snow shoes would not have been able to get along at all. They had made an exhaustive examination of Cape Gertrude and had collected all the drift wood into heaps for future removal.

I went up the talus and shot ten looms for the larder and also two glaucous gulls for specimens.

We are still working at the boat, and have been busy pushing on our preparations to start west, so to-day we did not take the usual Sunday holiday.

July 9th, Tuesday.—We have all of us been very

busy all day in getting out stores, sharpening harpoons, bending lines, &c., in preparation for our journey. The height of our ambition is to reach Cape Lofley, but we don't expect to do so, considering the difficulties Leigh Smith encountered in reaching, in the second year of his attempts, a position off Cape Neale.

It is evidently a dangerous coast to boat on, as it is only at long intervals it appears that it is possible to land, or to run for shelter in bad weather. Perpendicular glacier walls elsewhere line the whole coast to a height of fifty to eighty feet, to judge by what we see from Cape Flora, and found on our way in here last year, also by what Leigh Smith tells us.

July 10th, Wednesday.—We ran the whale boat down the snow slope, and launched her just below the flagstaff. I photographed her as she lay alongside a piece of land-ice near the floe berg at that point. We have been engaged all day in finishing the preparations and in getting the stores and our equipment on board. I went up the talus and shot thirty looms for us to take with us. I am leaving the doctor and Heyward at the hut, the former as Governor of Northbrook Island!

We shall leave about 11 A.M. to morrow, when the tide changes and the ebb-tide begins to run west, as this will give us a good start.

CHAPTER XIV

DRIVEN OFF THE COAST—NEARLY LOST

July 11th, 1895.—The whale boat I named after Mrs. Harmsworth, as a slight mark of my esteem for her, and with the feeling that a more popular name could not be chosen with which to honour our boat. She is carver built, rigged with a mast, dipping-lug and jib sails, and measures 25 ft. 6 in. long by 5 ft. 7 in. beam, and undecked. We started with seven oars and an ice anchor in addition to our stores.

We left at 11.30 A.M. on the westerly ebbing tide with a crew of six, to try and pass Leigh Smith's farthest on the west coast, and to thoroughly explore and map the coast and various capes and to make collections as far in that direction as possible.

We took a month's provisions and about one hundred and forty pounds besides, of various provisions for a depôt on Cape Grant, in case of an accident to ourselves or others.

I also took a 14 ft. canvas boat in tow to leave at Cape Grant to use in the event of our losing the *Mary Harmsworth* further west. I also took "Nimrod," the bear dog, who is skipper of the canvas one, as he will be useful in finding us fresh meat for our larder.

We had a light north-north-west breeze for an hour, which then died down to a calm, and we had to row. We reached Bell Island about 7 P.M., but finding Eira Harbour full of heavy fast ice with the floe extending

half a mile to seaward, we pulled round to the south-west side of the island, which we found also surrounded by land floe, and tied up to it, where we found a strong current coming out of Nightingale Sound, carrying ice

with it, which much bothered us to keep the boat clear of. After some food Armitage and I walked over the floe to the island to explore. We found it very barren of vegetation and life generally, with the exception of looms of which a good number were nesting on the rocks, there were few other birds. I found a Richardson's skua's nest with two eggs, and shot one of the birds as a specimen, but the other cleared out on being hit with a stone. The eggs had young birds in them, and would soon have hatched.

RICHARDSON'S SKUA

They behaved much like plovers on my approaching their nest, but acted with more courage, swooping down at me within a foot or two of my head. They also hovered around and pretended to be wounded. The cock bird showed the most pluck. There were two eggs laid in a nest which was a mere hollow upon a slightly

raised piece of ground and very difficult to see, as they closely resemble the colour of the ground.

To our great surprise we found Eira House, a weather-board hut put up by Mr. Leigh Smith fourteen years ago quite intact, with two small boats lying outside very much in the same condition as he left it just before the loss of his ship the *Eira*. Since then the silence of this spot has been unbroken, and articles left by him remained in the same positions as he had placed them. The boats had opened considerably at the clinker seams, and a bear had torn a hole in the larger one.

The reason why Armitage and I failed to find it in March was that it was nearly if not entirely snowed under then, and if any part was showing at all it would look like a piece of ice. There was a drift of snow fully four feet deep around the hut still, and the porch was blocked with snow and ice. There would be no demarcation in March between the low spit on which it is placed and the floe, as very great drifts form at this spot, and the land is low. The flagstaff on the roof was much gnawed by bears, showing that they had walked on to the roof from the surrounding snow drift. We entered by the porch after much trouble, as the door had been blown open and snow had entered which had formed into ice. The only letters we could find were two written by Lofley, in pencil upon the wall, and signed by him and some of the crew. The first dated September 10th, 1881, saying that they intended to try and reach Nova Zembla in their boats, leaving about June 21st, or else to wait for relief. The second was dated June 14th, 1882, a week before they retreated south in their boats, when they came over from Cape Flora for stores. There were a few photographs on the walls of the ship's company. Our expectations were great on

seeing a number of beer bottles ranged around the walls, for we were very thirsty, and had not tasted beer for long. These expectations were, however, short lived, for, alas, the bottles were empty! A few novels lay about, some nails, an empty gun cotton cask, which I opened to see if it contained letters, as Crowther told me they had been left in a cask; a shovel and the remains of a cooking stove.

The hut is wonderfully well preserved and quite intact, excepting a few cracks in the roof and walls. We found an oar fixed in a pile of stones, showing scratches of bears' claws upon it, about three hundred yards to the south-west of the house. The site seems to me to be a very unsuitable one for a hut, but I expect it was the nearest point to the harbour to which Mr. Smith's party could approach with the ship in 1881 owing to it being blocked with ice.

We had a long and very tiresome walk back to the boat, as we had to cross the bay from the spit over a very wet floe with water nearly up to our knees for two miles, to the land opposite. We got back at 3 A.M. We heard several glaciers to-day discharging bergs, giving forth sound like distant thunder. They appeared to be about six or eight miles off. We walked in all about six miles by the way we went to Eira House and back to the boat.

We slept in the boat, lying across the thwarts muffled up in our furs. The space was very limited for six of us, and we must have looked very much like sardines in a tin. Occasionally through the night I turned out to see if the boat was safe, as she was lying in a very exposed position at the edge of the floe, and I rather feared ice coming down upon her with the change of the tide. However, the night passed uneventfully.

July 12th, Friday.—We let go from the floe-edge at 10 A.M., and as we had a little breeze from the north we washed ourselves and had our breakfast as we sailed towards Cape Grant, for I wished to make the most of it. The breeze, however, entirely died away in an hour or two after starting, so we took in the sails and had to pull against a strong tide running east.

After a long heavy pull we reached Cape Grant at midnight, and found a snug cove for the boat to lie in in the remains of the land floe, under the cliffs on the south-east side. There is no beach at this point, as the sharp jagged talus of basaltic boulders runs right into the water. The basaltic cliffs, much of which is columnar, appear to be about nine hundred feet high. The talus on the east side of the cape is covered with a luxuriant covering of mosses, scurvy grass, &c., induced by the manure from the birds (looms, mollymokes, burgies, dovebies, and kittiwakes) nesting on the rocks above and roches on the stony talus. I saw two foxes after our arrival (the first seen by us in Franz Josef Land). They were small, lithe looking animals about the size of a hare with a white tail and a piebald body (piebald in large blotches).

They were possibly only just changing their coats for the summer. I tried for a shot, but they were too wary to allow me to get within distance. They uttered a peculiar harsh (quaaking) cry when alarmed, which I at first thought was a bird's. I found the remains of numerous looms, kittiwakes, &c., which had evidently formed their prey, around holes and crevices in the rocks. We pitched our tents upon the land-ice just off the shore, and slept in our militzas, turning in at 4 A.M.

Twelve months ago to-day we left Greenhithe. I hope the *Windward* may soon be back there and

relieve anxiety about us at home. We six are as well and jolly and as happy as can be, full of interest in our work.

July 13th, Saturday.—Armitage took an observation for latitude at noon, and having made a depôt of eight days' provisions for six men, and leaving the canvas boat we left with a north-east breeze for Cape Crowther.

We found a good deal of loose ice off Cape Grant, and Gray Bay full of fast land-ice, except on the eastern side, down which a strip of water runs. Some very large bergs lie grounded off Cape Grant. A heavy pack lay off the entrance to Gray Bay on the west side, and rests against Cape Crowther. We struck out seawards towards the south-west and tried to round it. But the tide suddenly set into Gray Bay, bringing the ice with it, and before we could get clear, and in spite of our energetic rowing, the pack caught our whale boat and nipped us between it and the land-ice of Gray Bay. For a time things looked nasty, and we were in peril of being crushed. Fortunately a tongue of ice ran underneath her and squeezed her up with all her forepart out of the water, otherwise she would have been crumpled up like an egg-shell. We thought she was actually stove in, and began to pass our provisions and stores out on to the floe in the expectation of her sinking when the ice eased off. It was essential to save all we could. We should have had to camp on the floe and then endeavoured to reach the land. But having removed some of the goods and made a closer examination, we found the boat had escaped with the exception of being opened at the seams, and the okum protruded in places. On the ice wheeling round we managed to get her clear of the nip. After getting the things back into her with all possible speed, we rowed with all our strength to get clear of a berg and

OUR CAMP ON CAPE GRANT, JULY 14, 1895

the main body of the pack, which was fast coming down upon us. Once caught twice shy, and a repetition of our late squeeze might mean an ending for all of us.

The wind had gradually died down to a calm, and in spite of our exertions we moved very slowly, owing to the weight in the boat, and a walrus which I had shot being towed astern, and which I did not wish to cast adrift unless absolutely obliged to save the boat and our own lives.

After about two hours' vigorous rowing, we got clear of the ice and reached Cape Grant about 11 P.M., where I mean to wait for a change in the ice before trying to reach Cape Crowther again, as at present it cannot be done in a boat. The thunders of discharging glaciers were constantly heard during the day. What a wonderful roar it is. In all this lifeless stillness the breaking off of glaciers in discharging bergs sounds like a cannonade or thunder and at times is quite deafening.

Armitage and I caught a young vixen in the evening among the rocks on the talus. There were two young foxes running about among the crevices of the boulders, but although we tried for hours we could not get hold of the other one. The mother is a piebald animal with a white tail, a white patch on the near flank and most of the body dark brown. She was, however, very shy, and I could not get nearer than about ninety yards. I got, however, a good view of her through field glasses.

July 14th, Sunday.—The walrus I shot yesterday was a small cow, and measured : Along belly from tail to muzzle, 9 ft. 1 in. Around abdomen, 7 ft. 8 in. Around shoulders, 7 ft. 5 in. Width of flippers, 1 ft. Length of flippers, 1 ft. 11 in. Width of back flippers, 2 ft. 2 in. Length of back flippers, 1 ft. 9 in.

Contents of stomach.—Pieces of basalt as large as marbles. A few shrimps. A large number of white elongate bodies (specimens preserved).

The bulls are very much larger.

Soon afterwards a she-bear put in an appearance, and began to eat pieces of walrus meat which we had placed out on the floe for the entertainment of such

DEAD WALRUS. ON CAPE GRANT

visitors. I called Armitage, and we took our rifles and succeeded in killing her. We skinned the bear in the evening.

July 15th, Monday.—I am sending Armitage back to Cape Flora to fetch a "handy billy," and to bring the doctor, for whom I have room in the boat.

At 4 A.M. this morning I turned out, for we were still camped on the land floe, to see if our boat was all right and safe ; but I found that part of the land-floe had

broken away and had come in on the boat, and was threatening to crush her.

I turned out all hands, and after taking everything out of her hauled her out upon the ice; we then made a "purchase" round a rock, and drew her up into a place of safety.

Armitage left with the boat at 2 P.M., when the tide began to set east.

Fisher and I went about two miles round the western side of the cape, and came across two Richardson's skuas. In trying to find their nest, while Fisher was looking for plants, I got a quarter of a mile ahead; and while so engaged I saw a large bear going towards him, who did not notice him, being busily engaged grubbing about on the ground. I shouted to Fisher and ran down between him and the advancing bear. I had the single-barrelled Henry rifle with me, and at about 35 yards distant I placed the first shot in his neck as he came towards me, having left Fisher, who retreated up the slope behind me. This, however, did not stop him, and he still came towards me with his mouth open, evidently a bit annoyed at his reception. I shot him again, this time through the face as he partly turned his head on one side; and then as he wheeled round and made for the water, I put a third bullet behind his right shoulder. This, however, only stopped him for a few seconds, and, bleeding profusely, he took to the water and swam to a low grounded berg about four hundred yards from the shore, upon which he clambered after several failures. There he evidently died directly afterwards. I shall fetch him in the canvas boat as soon as the wind and swell goes down sufficiently to enable me to do so. He is a huge he-bear. We afterwards found the Richardson's skua's nest. When returning to camp we found that "Mr.

Bear" had followed our footsteps all the way up to the point where he overtook us, and had actually left the walrus meat and blubber near the camp to track us. It is just as well we had a rifle with us. He was evidently a bit of an epicure, and viewed us as a delicacy.

It has been snowing and sleeting off and on all day with a thick mist, and generally very disagreeable weather.

The heavy pack ice has closed in around Cape Crowther, and now lies against the portion of the land

RICHARDSON'S SKUAS (TELEPHOTO-LENS)

ice of Gray Bay, that we sailed along the edge of on the 13th.

The soil on the south-eastern side of the cape is kept damp in summer by numerous rills from the snow melting upon the rocks and ice-cap above, and well manured by the numerous birds—chiefly looms and mollymokes—which nest there. *Cochlearia anglica* L. *V. fenestrata* Br. abounds on this side, and all plants are very luxuriant here.

On the western side is a corrie; at its base an old moraine, and below that again raised sandy beaches,

upon which a few plants find a home. If there were as much sunshine on the western side, probably the flora would be richer than on the eastern. The rich soil seems to produce luxuriance rather than number of species. Mr. Fisher tells me he has found seventeen in all, including *Cerastium alpinum* L. *V. uniflorum*. This last form is apparently confined to Cape Grant, where fine plants are plentiful in one place. *Cardamine bellidifolia* was in flower on July 15.

July 16th, Tuesday.—Sleeting and snowing, with a dense mist, nearly the whole day. There is still too much swell to fetch the bear in the small canvas boat, and our whale boat is still away.

We read, smoked, and did odd jobs about the camp until about 10 P.M., when it ceased snowing and the weather became a little better. Fisher and I then went round Cape Grant to see if the ice upon which the dead bear was lying was still where it was, and to fetch the skua's eggs, which we had found; and I shot the two birds for specimens. To our annoyance we found the heavy piece of ice, which appeared to be firmly aground, had drifted away, of course taking our bear with it, and now was nowhere to be seen.

Fisher did some more botanizing, and we examined an old moraine, by the side of which the glacier had apparently once come over the cliffs above, but had now quite disappeared. We, however, found nothing of any particular interest. Some fox-holes were to be seen in the summit of it.

We then returned to camp and turned in. On the way back I shot a glaucous gull with the Henry rifle. There are now young looms, kittiwakes, and burgo-master gulls in the nests on the rocks. Nearly all the unhatched eggs have large birds in them.

July 17th, Wednesday.—We overhauled the depôt we made here on July 13th on the south-east side of the Cape. It is at the foot of the rocky talus, and about twelve yards from the water's edge, covered with large stones. Over the depôt I placed a Union Jack upon a bamboo staff. I left the following stores for ourselves or for others in case of emergency—the *Fram* people or some one else may be glad of them some day: 56 lbs. of biscuit, 14 lbs. of boiled beef, 13 lbs. of ham, 4 lbs. of butter, 1 tin of lentil, 4 tins of beef extract.

Below the flag, in a tin, I left the following letter, with a request that the finder would forward it to Mr. A. C. Harmsworth:

“Six members of the Jackson-Harmsworth Polar Expedition landed here on July 13th, 1895, intending to push round Cape Crowther (the next cape to north-west of here) in their whale boat the *Mary Harmsworth*. Finding Gray Bay full of ice (fast) up to Cape Crowther, excepting a narrow water-way on its eastern side, and a very heavy pack lying around Cape Crowther and right out to sea, they returned here on the 14th of July, after having their boat nipped and nearly crushed, to await a change in the ice before trying again.

“FREDERICK G. JACKSON,
“Commanding the Expedition.”

The weather still bad. Snowing at intervals, and overcast and misty. We were sitting as comfortably as possible eating our dinner of bear's meat, cooked in our little stove, tea and biscuit, when an unexpected wave arrived and nearly washed us out of our tent, scattering our things upon the waters. As the high tides are now swamping us, Fisher and I set to work to carry our

TAKING OBSERVATIONS FOR POSITION AT OUR SECOND CAMP ON CAPE GRANT

things and pitch the two tents round on the eastern side of the cape, where there is a narrow strip of black sand. While so engaged, the *Mary Harmsworth* hove in sight, with Armitage in charge, having been to Cape Flora and brought the doctor. One of them had been sea-sick all the way, Armitage informed me with a grin as soon as the boat came within shouting distance, but they had had a fairly good journey. They also brought a 9 ft. 6 in. sledge which I had sent for, as I think it may be useful in exploring round Cape Crowther or elsewhere if we find good firm land-ice beyond. I received a letter from Heyward in reply to my directions installing him as Governor of Northbrook Island assuring me of his intentions to do his best. I hear that his Excellency's appearance when last seen was not at all in accordance with his exalted position which a little mending would improve.

The young blue fox was killed this morning through pulling a stone in her pen down upon herself. This is quite distinct in appearance to the Cross fox of Waigatz.

July 18th, Thursday.—We took out the whale-boat with a dredge and tow-net, but we found the water around Cape Grant very devoid of life, and the bottom being stony, unsuitable for dredging. We only got a few red laminaria, shells, and shrimps. The water is very shallow for some distance to the east of the cape. I went out in the canvas boat in the evening in pursuit of a drake eider duck, but found him too wild to get within shot.

The doctor and Fisher tried to reach the moraine between the two glaciers on the Cape Grant side of the rocks,* between here and Cape Stephen, over the land

* Named by me the Cooke Rocks, after Mr. Henry Cooke, H.B.M. Vice-Consul at Archangel.

floe, but were stopped by an open lane of water and had to return.

July 19th, Friday.—Armitage, Child and I ascended Cape Grant to-day by climbing up the glacier behind it. We found the height of the ice-dome on the top to be a thousand feet by aneroid. The plateau around the top of the cliffs which are nine hundred and thirty feet was nearly free of snow. I collected a few mosses, a saxifrage, and a grass, but the vegetation is very sparse indeed there, *Draba alpina*, L., *Saxifraga cernua*, L., however, were noticeable on the summit nine hundred and thirty feet above the sea. A fox "quaaked" at us from a pinnacle of rock above, as we ascended the glacier. We made a cairn of stones at the edge of the highest rocks on the south-west side, on which I fixed a Union Jack on a bamboo staff. I placed a letter in a .450 Henry express cartridge case, and tied it up to the flagstaff and closed up the end with the bullet. I stated in the note that we had ascended the cape, and that to-morrow we intend to try and reach Cape Crowther in our boat the *Mary Harmsworth*.

All the ice seems to have now cleared away from Cape Crowther although Gray Bay is still nearly full of fast ice, but some has broken away since the 13th. I could see now no ice of any extent either S.S.E. or south-west (except a circumscribed patch of pack to the south-west about thirty miles off).

There also appears to be a channel of water leading right up to Cape Stephen. Nightingale Sound is still full of apparently unbroken ice. Its appearance rather belies its name, no singing bird ever warbled sweet notes here, I fancy. It is named, however, after Miss Nightingale of Crimean fame. From the top of the Cape we saw a large school of white whales coming from the

direction of Cape Crowther and going east, but without stopping for a moment ; we saw a few white whales once only after this. Blomkvist and I took two young burgies and a nest this morning on the rocks. He is trying to rear the young ones.

Eira Harbour is still full of unbroken ice.

Fisher and Blomkvist went out in the canvas boat to fish while we were away, but did not get so much as a bite. So we cannot have *Poisson à la reine* for dinner to-night. There is very little life in this blue water here.

I saw a large berg sailing quietly and peacefully along to-day suddenly break into a number of parts, simply fall to pieces, so to speak, and collapse in the sea off the cape. There are many largish bergs off here, some flat-topped, others pointed. I have, however, seen no bergs over seventy-five feet high since reaching Franz Josef Land.

"Red snow" was very conspicuous upon the glacier between Cape Grant and the Cooke Rocks.

July 20th, Saturday.—As it was calm all morning I sent the doctor and Fisher over the glacier to examine the moraine they tried to reach over the floe on Thursday. They reported to me on their return that there is nothing of interest there. It consisted simply of broken-up basalt. The height of it is three hundred and twenty feet. The height of the glacier across which they walked is four hundred and forty feet. The face itself is about sixty feet. These heights are by aneroid.

A breeze sprang up from the north about 3 P.M., and after having some lunch we packed up and set out for Cape Crowther.

We took an observation for latitude at noon, but a cloudy sky prevented one for longitude afterwards. The

constant overcast skies and mists have rendered astronomical observations very difficult to obtain.

We left for Cape Crowther at 4 P.M., and after getting clear of the headland we met with a very heavy swell coming in from the westward; the wind also was very changeable and fitful, now blowing nearly a gale with squalls and then falling dead calm. The boat shipped a good deal of water from the heavy swell and squalls. We reached Cape Crowther at 2 A.M. on the 21st.

We had to row a great part of the way as the wind eventually quite failed us, which we found pretty tough work with a heavily loaded boat and a heavy head sea. We however met with little ice, and the sea appears practically clear to the west, south-west, south, and south-east. Much of the ice has now come away from Gray Bay, and David Island which is very small and low is quite clear. I intend to explore Gray Bay on our return journey if possible.

We camped on the south-east side of Cape Crowther on a shelving beach between the glacier which divides the rocks on that side and the point of the cape, and to the east of some low pillars of basalt which rise from the water's edge at the part of the talus on that side. We hauled the boat almost clear of the water by means of the "handy billy" made fast to a boulder and pitched our tents a few yards higher up.

After cooking some food we all went for a walk to explore and to collect anything of interest. No one has ever before landed on any of these capes.

There is a good wide beach here with small mossy pools, nothing of special interest was found, and Fisher tells me he has only collected fifteen species of plants. *Saxifraga oppositifolia*, L. is even scarce here. The rocks are of the prevailing basalt.

July 21st, Sunday.—Armitage, Blomkvist and I made a cairn of stones upon the summit of the low rocks below the talus and close to the sea. Upon it I fixed a Union Jack upon a seven foot bamboo staff. In a tin at the foot of the staff I placed the following—

“THE JACKSON-HARMSWORTH POLAR EXPEDITION.

“Six of the members of the above Expedition arrived here in their whale-boat *Mary Harmsworth*, from Elmwood, Cape Flora, on Sunday morning at 2 A.M., July 21st, 1895.

“We intend to endeavour to push round Cape Neale when we get a favourable wind. All well.

“FREDERICK G. JACKSON,
“Commanding the Expedition.”

Upon the flagstaff I tied an empty .450 Henry Express cartridge case, containing the following written upon a strip of paper—

“THE JACKSON-HARMSWORTH POLAR EXPEDITION,
“*July 21st. 1895.*

“A letter is enclosed in a tin and hidden beneath the stones at the foot of this flag, which, having read, please forward to Mr. Alfred C. Harmsworth.

“FREDERICK G. JACKSON,
“Commanding the Expedition.”

It is blowing hard from the north and has been raining very heavily all day. We must wait for better weather before proceeding towards Cape Neale.

I notice that icebergs drift away towards the southwest from here, indicating a current flowing in that direction. I shall be interested in hearing the amount and condition of the ice on the eastern side of Spitzbergen

this year. This appears to be an unusually open year on these coasts. The rocks on Cape Crowther are more extensive than those on Cape Grant, and on the eastern side bear a strong resemblance to the walls of an ancient fortress prison, with the basalt weathered into the shape of buttresses.

At the extremity of the cape the rocks rise to an altitude of about 900 feet. They extend only a very short distance on the western side, and the cape looks insignificant from that aspect. The vegetation near our camp is very scanty. Two pieces of drift wood have been picked up on an old sea beach above the level of the present one by sixteen feet. On the latter none is to be seen although it is favourable for receiving it. There are evidences of great ice pressure on the beach below our camp, and there are piled and crushed-up masses of ice still adhering to the land being forced up on it in many places.

Looms are nesting upon the rocks at the point of the cape, and rotges among the broken-up debris of the talus. Glaucous gulls, dovekies, kittiwakes, and mollymokes are also nesting upon the rocks. Blomkvist took two more young burgies on the low rocks near our cairn to-day. I also found a skua's nest with one egg in it, upon which the hen was sitting. This is the season for bird life. They will be leaving us in a few weeks for warmer and more favoured climes. Upon the highest raised beach we found some silicified wood and silicified plant-remains, also chert containing vegetable matter.

July 22nd, Monday.—It blew very hard and rained in torrents throughout last night (an unusually heavy rain for the Arctic regions), but cleared up about 10 A.M. I took the skua's egg and shot the parent birds for specimens. I secured several photographs, and Armi-

tage and I took sights for latitude and longitude. We explored the cape and collected everything of interest. In the forenoon we started off for Cape Neale, pulling until clear of the cape. The light variable airs with which we started soon died down to a calm, and we had to row nearly the whole way.

We reached Cape Neale at 11 P.M., and pitched our camp upon a stony raised beach upon the south-east side of the cape, and pulled our boat out. There is a shallow bay between Capes Crowther and Neale nearly filled up with glacier. At intervals black rocks jut out of the ice between the two capes. We passed through two or three streams of loose ice on our way, but the sea appears open and free of any ice likely to stop us.

I took angles with the prismatic compass as the atmosphere was very clear :

Cape Crowther, $150^{\circ}\frac{1}{2}$; Cape Ludlow, 310° ; Cape Lofley, 303° .

We also discovered a cape to the west of Cape Lofley, which I named Cape Mary Harmsworth (bearing 306°) after Mrs. Harmsworth and our boat. This cape is beyond the land seen by Mr. Leigh Smith. Both it and Capes Ludlow and Lofley appear from here to be without vegetation or beaches, and to be nearly overrun by the glacier behind them.

In a little port wine we had brought with us, we drank to the health of Dr. Neale, who has always been a good friend to my expedition. We have achieved more in our little twenty-five-foot whale-boat than Leigh Smith was able to accomplish in two years in his ship. Showing how the seasons and ice conditions vary here, I find that his position for latitude of both Capes Ludlow and Lofley are not quite correct, but he viewed them from a point a considerable distance off the land. His

mapping, however, is excellent and a model for discoverers.

July 23rd, Tuesday.—We made a cairn of stones upon the upper of two prominent mounds upon the talus at the south-east point of the cape, and placed in a tin the following record, over which I fixed a Union Jack :

“THE JACKSON-HARMSWORTH POLAR EXPEDITION.

“We the undermentioned six members of the above Expedition arrived here from Elmwood, Cape Flora, in our whale-boat, the *Mary Harmsworth*, at 10.45 P.M. of July 22nd, 1895.

“We have landed upon all the capes between here and Cape Flora, leaving records and Union Jacks upon each.

“We have carefully mapped also the whole coast line. We intend to endeavour to round Capes Ludlow and Lofley.

(Signed) “A. B. ARMITAGE.

“R. KOETTLITZ.

“H. FISHER.

“J. F. CHILD.

“K. BLOMKVIST.

“FREDERICK G. JACKSON,
Commanding the Expedition.”

Cards of the various members of the party were also enclosed in the tin. I added: “Please forward a copy of this letter to Mr. Harmsworth, leaving this here.”

I made the tin, enclosing the above letter, fast to the foot of the flagstaff, and tied an empty .450 Henry Express cartridge case to the staff three feet from the ground, containing the following note :

CAPE NEALE WITH RECORD CAIRN ON THE TALUS IN THE DISTANCE

"THE JACKSON-HARMSWORTH POLAR EXPEDITION.

"A letter in a tin is buried beneath the flag and staff under these stones. Having read it, please replace it, and send a copy to Mr. Harmsworth.

"FREDERICK G. JACKSON,
"Commanding the Expedition."

I shot a few rotches and dovebies for the pot. There are no looms here. There are a few pieces of driftwood (pine) on the shore, which we reared on end and fixed with stones. None is recent, and all were considerably above present high water.

After having lunch we cooked some "Johnnie cakes" at a driftwood fire—the first fire we had had in Franz Josef Land away from the hut. This was a red-letter day. The doctor and I about midnight climbed to the top of Cape Neale (about 700 feet high) by a gorge on the eastern side. We made a cairn of stones on the edge of the cliffs above our camp, concealing among the stones a note placed inside two 12-bore cartridge cases.

It has been a dense fog all day at sea-level, but on the summit we got above the fog and found there the sun shining brightly. The effect of this was very curious. As we ascended the heavy mist became lighter and lighter, and gradually the soft rays of the sunlight made themselves manifest, until on the summit we were literally bathed in the sun's refreshing light. There were many yellow and white poppies, *Papaver nudicaule*, *Draba alpina*, in blossom and a few saxifrages. It surprised us much to find these flowers here, and the bright bits of colour have a great charm. There is now no ice-cap immediately above the rocks, and the extensive flat plateau is nearly clear of snow. I found a quantity of fossil-wood there, showing the grain very perfectly. Some dark

flinty specimens containing plant-remains and some dark stuff that looks like sinter. I shot two roaches and a burgomaster gull on the summit.

Owing to the dense fog near the sea surface I could see very little of the surrounding country, but when clear I shall have a splendid view to the west and north-west—in fact, all round.

I intend to return to-morrow, if clear, and take bearings and make sketches, and if possible to photograph the land to the west, north-west, and north.

During lifts in the fog we got good observations for latitude and longitude—both A.M. and P.M. sights for the latter.

Fisher has found six plants not before discovered on Franz Josef Land on Cape Neale, and a new fungus or mushroom with umbrella-like ribs.

The southern side of Cape Neale has numerous small rills spreading along the lower beach, chiefly derived from the glacier. There are patches of grass of small extent. In one place where the grass is well watered there is a carpet-like stretch of verdure, and amongst the grass and saxifrages were found *Stillaria* in bloom, but only six plants. In no other spot does this plant flower. Here the *Stillaria* is smaller than usual. *Luzula congesta* is also very small here. *Juncus biglumis* is finer here than at other stations and more plentiful. All these plants are confined to a space of twenty square yards.

Saxifraga oppositifolia is much scarcer here than on any other spot, and is not plentiful on any of the three most western capes (Capes Grant, Crowther, and Neale). There is more on the summit of the cape (700 feet) than on the beaches below. There is no apparent reason why this should be so, as similar soil is to be found on both spots. *Confervæ* grow sparingly in a rill and pool of

water on the summit, which do not favour the growth of any phanerogams.

July 24th, Wednesday. — I sent Armitage with Blomkvist and Child back in the boat to Cape Grant to bring up a week's provisions, as we are running short of many things and shall require more to enable us to round Cape Lofley. They left about 3.30 P.M.

Fisher, the doctor, and I then ascended Cape Neale by the gorge. We made a cairn of stones near the edge of the cliffs on the western side, among the stones of which we placed a letter in a tin tied to the bottom of a piece of driftwood, cut into the form of a flagstaff and fastened a Jack to it. In this letter I stated that we three had been engaged in taking bearings from the top of Cape Neale and in making sketches of the country to the north-west and that we had discovered a cape beyond Cape Lofley to the westward. To-day I could confirm this discovery.

On the summit of the cape we noticed over a large area narrow cracks in the soil, pentagonal in form, which we agreed were probably caused by and correspond to columnar pillars of basalt below the surface.

Nordenskjold, noticed apparently somewhat similar markings of a six-sided character on Cape Chelyuskin.

We sketched the bay between Capes Neale and Ludlow and the whole coast line, and took bearings of all noticeable points. The mist lifted sufficiently for us to do this, but rendered the land beyond Cape Lofley rather indistinct. We could, however, very definitely make out the outlines of Cambridge Bay, which was full of ice. The land to the westward appears to be one large glacier with a few small faces of rock jutting out of the coast line at long intervals. Only little detached ice can be seen from here to seaward. I measured

Cape Neale to be 700 feet, the upper 250 feet of which is basalt. I photographed the cairn and also Cape Crowther from the top. Found a very old seal's skull and some vertebræ of a seal on the plateau of the summit which I am preserving. I shot a few dovekies and a tringa* when up there.

If I only had the *Windward* now I might push a long way to the westward—what a chance! A small

OUR CAMP ON CAPE NEALE, JULY 1895

glacier runs down between the cliffs on the west side of the cape, and we amused ourselves by bowling stones down it from the rocks above. The two young burgo-master gulls we found this morning had escaped from their pen in the night and were found swimming on the sea when we turned out; we, however, recaptured them.

We have been using scurry grass (*Cochleria fenes-*

* Purple sandpiper.

trata) as salad daily during the last month, as there is a good quantity on all these capes. We find it excellent.

I have shot four purple sandpipers here.

The land to the westward appears to be more arctic even than to the eastward, and nothing can be seen but glacier flowing seaward from very high land, with a few bare faces of rock jutting out of the ice like nunataks, and all but completely overrun by it. No beach is apparent at either Capes Ludlow, Lofley, or Mary Harmsworth. The tide flows east and west along the land here, but at slack water no current near the land is perceptible. Bergs, however, go off to the south-west at a distance from shore.

I hope next summer to bring the *Windward* round here if it should be a similar season to this as to this ice. I think that probably in another week or so a ship could pass right up Cambridge Bay by the bold headland to the northward, named by me Cape Fridtjof Nansen. This may be a route to King Oscar Land by ship, if such a land really exists.

PURPLE SANDPIPER

Bearings from the plateau on the summit of Cape Neale. Highest level (west side).

Altitude 700 feet by aneroid. July 24th, 1895. Extreme point of Cape west of Cape Lofley 279° (Cape Mary Harmsworth). Point of Cape Lofley $280^{\circ}\frac{1}{2}$; point

of Cape Ludlow $287^{\circ}\frac{1}{2}$; throat of bay 307° ; low rock $314^{\circ}\frac{1}{2}$; west extreme of black rocky cape 343° ; east extreme of black rocky cape $347^{\circ}\frac{1}{2}$; rock in north-east point of bay $357^{\circ}\frac{1}{2}$; Cape Crowther 125° ; rock in bay between Capes Neale and Crowther $107^{\circ}\frac{1}{2}$.

Cape Mary Harmsworth is, I believe, very possibly situated on Gillis Land, said to have been sighted by Captain Gillis in 1707. Nordenskjöld evidently believes that Petermann had no justification for placing the rather mystic Gillis Land in its present position. This point ought now to be decided.

On the summit *Papaver undicaule*, *Draba alpina*, L.; *Cochlearia anglica*, *Stellaria* sp., *Saxifraga oppositifolia*, L.; *Saxifraga cernua*, L., and *Saxifraga rivularis*, were noticeable.

July 25th, Thursday.—Fisher and I walked round to the western side of Cape Neale to see if the young glaucous gulls which yesterday, from the top of the Cape, we saw upon a pinnacle of rock half way up the cliffs can be reached.

After a difficult and rather dangerous climb I managed to reach the pinnacle upon which the nest was, which was about one hundred feet above the top of the talus. I secured three young ones, apparently all belonging to the same nest, but this had been kicked or blown way. At first only one old bird was to be seen, but another joined it after I had been there a time. The young ones on my approach retreated to the extreme of the crumbling edge of the cliffs, and on my attempting to secure the third it overbalanced itself and fell over, and I all but followed it. Its wings were however, apparently sufficiently developed to save it from fatal consequences by parachuting it down in spite of its hundred-foot tumble, as I picked it up on the ice-slope below

apparently uninjured. The old bird showed great boldness on my approaching the young ones, and swooped down at me within a foot of my face.

I shot three buntings (two young ones which could fly well, and an old cock) as specimens, and a number of rotches for the pot. There are no looms on the rocks here.

It has been a dense mist all day and a cold, raw atmosphere.

July 26th, Friday.—A dense mist and fine rain all day, changing to snow in the evening. A heavy swell is rolling in on the beach from the southward. Evidently it has been blowing hard in that direction, but it hasn't reached here.

We could do very little here to-day and the time has been chiefly spent in sorting specimens, smoking, cooking and eating our meals. I hope the boat will soon be back as I am anxious to push on to Cape Lofley.

July 27th, Saturday.—Fisher and I went up the talus on the western side and I photographed the glaucous gulls eyrie where I got the young ones on Thursday.

Armitage returned about 2 P.M. in the whale boat. He had been much delayed by a gale from the south and a heavy swell caused by it, at Cape Grant, and had to wait there. Also ice coming out of Gray Bay proved troublesome. They brought the weeks provisions and also various other articles required. The doctor and I went up to the summit of C. Neale in the afternoon to fetch the prismatic compass stand which I had left up there in the hopes of the mist clearing and enabling me again to take bearings. The mist to-day is very thick and much ice lies off the land, having come

out of Gray and Cambridge bays. I intend to start for Cape Lofley to-morrow.

The doctor came to me after the return of the boat in great glee, and extremely delighted with himself and with the world in general, to tell me that one of our crew has "made himself ill by eating too much and has a temperature of 102°."

He had excited great wrath by taking away some food by mistake in the boat belonging to the doctor's tent. Hence possibly his diagnosis of the cause of the sickness! The incident caused much amusement and laughter, in which even the unfortunate patient joined.

July 28th, Sunday.—I placed the following letter in an empty one gallon spirit tin, and buried it under a cairn of stones on the site of our camp.

"THE JACKSON-HARMSWORTH POLAR EXPEDITION.

"The boat with a week's provisions having returned from Cape Grant, we are starting this morning in the *Mary Harmsworth* to endeavour to reach Cape Lofley. We have also discovered a Cape to the westward of Lofley which we may proceed to before returning. We have established two cairns containing letters on the summit (700 ft. by aneroid). One with a Union Jack over it. And also a cairn with a Union Jack above it, and a letter in a tin on the pointed ridge of the talus looking north-west from here (being on the north-west sky line of the talus from here).

"We are all well. "FREDERICK G. JACKSON,
"Commanding the Expedition."

We left C. Neale about 11 A.M. and rowed round the cape to clear a lot of drift-ice, and then set sail across

the bay. After proceeding some distance Cambridge Bay began to open out, and we could clearly make out the large bold headland—Cape Fridtjof Nansen with pockets running up on either side forming a prominent cape. On the northern side the water appears to run out in the form of straits connecting Cambridge Bay with sea to the northward.

At 4.30 P.M. we passed Cape Ludlow, which is merely an ice-covered and a glacier-faced promontory, with upper ridges of a rock showing through the ice. Landing was impossible here. A rough sketch was made of it, and after we had passed it some distance I took a photographic snapshot of it. We had gone through much ice, and as we sailed on towards Cape Lofley it became much closer, and our progress, owing to it and the wind freshening and the whole coast being glacier-faced, rendering landing impossible and offering no shelter, more and more risky. At 9 P.M. we rounded Cape Lofley and ran on to within five or six miles of the cape west of it (Cape Mary Harmsworth) which I had first definitely seen from the summit of Cape Neale. Beyond it lay a dense bank of mist. The wind had now increased to nearly a moderate gale, and the ice had become very close, but of a low level description of from four to five feet in thickness, and being in motion we had many very narrow escapes from it. We had taken in a reef in the lug sail, and had now continually to put the boat's head up into the wind and to shake the sail to avoid gusts.

Cape Lofley is of the same character as Cape Ludlow, with just a little more rock showing above the ice, but is glacier-faced, and there is nowhere where it is possible to land, still less to haul a boat out.

Cape Mary Harmsworth appears to be very similar

in these respects. Heavy ice lay to seaward and ahead of us, and had every appearance of a tight pack, the wind was increasing in force with an ugly looking sky, and a rapidly falling barometer. Things looked very threatening, and it would be extremely nasty to be caught in a gale in our cockle-shell, especially amongst the ice we were in, which although not heavy enough to break the force of the sea, was quite sufficiently so to smash our boat to match-wood; the whole coast was faced by high overhanging glaciers rendering landing impossible. I decided to try and get back to Cape Neale, which was apparently the nearest spot we could land upon, and to wait there until the storm passed over before proceeding.

The whole coast reaching from the throat of Cambridge Bay to as far as we could see to the west, is one unbroken glacier-face with the tops of basaltic rocks jutting out of the ice, with very high country behind it (it appeared to rise to about two thousand feet). A more utterly desolate scene it is impossible to imagine. With the wind rapidly increasing, glacier-face to right of us, and ice and stormy sea to left of us, our position was becoming very uncomfortable. Nothing but one large glacier could be seen landwards. Cape Mary Harmsworth appeared to be as equally ice-bound at the shore as Capes Lofley and Ludlow. We estimated that Cape Ludlow is distant from Cape Neale seventeen miles, Cape Lofley from Ludlow thirteen miles, and Cape Mary Harmsworth from Lofley fourteen miles.

After turning our boat's head round to try and reach safety at Cape Neale, we ran with the wind two points on our port quarter. We threaded our way amongst the ice, often narrowly escaping collisions, with the spray breaking over us, and frequently shipping seas over the

weather gunwale. We were all of us drenched to the skin : and a snowstorm coming on rendered it difficult to see Cape Neale.

At 10.30 P.M. the wind increased to a fresh gale and occasionally to a strong gale in the gusts, and the now high sea caused the boat to make so much lee-way that weathering Cape Neale looked very improbable. Things had now begun to look very nasty. We could proceed under sail no longer, and there was literally nothing for it but to try and weather it out in the open. We made a deep-sea-anchor with three oars, to which we lashed the ice-anchor, and with about twenty fathoms of line attached to it from the bows brought the boat's head round to the sea. The sea rapidly increased and huge breakers threatened to swallow us up at every moment. They rose like mountains above our heads, and each one seemed about to engulf us. Snow and sleet continued throughout the night, and we could not see the land at all. It was bitterly cold and we were very tired and hungry, but the boat required such constant attention in bailing out seas, and other work, and there were such difficulties in the way of getting food, that taking any was out of the question.

Thus we rode out the night, expecting every moment to go down. The cold was trying, we were wet to the skin, hunger was beginning to be felt, but we had not time to think of anything but bailing out our craft and keeping her head up to the sea. Every one was more or less cheerful, although one or two looked very much concerned, but I saw no fear in any one's face, and all obeyed orders promptly and without offering suggestions or advice, which on such occasions especially, when promptitude of decision is essential to safety, would be particularly troublesome.

The barometer fell from 29.75 at 6 P.M. to 29.65 at 9 P.M., and to 29.60 at 10 P.M. (At 10 A.M. it had stood at 29.85.)

(Note: August 13th. On comparing the aneroid we find it registers six-tenths too high, making 29.60 equal to 29.00.)

July 29th, Monday.—Matters have not improved in the least. It still blows as hard as ever and a tremendous sea is running with often very nasty cross seas, which render it impossible to properly head them. We are however still afloat, and the *Mary Harmsworth* is fighting a tough battle for us; shipping a great deal of water frequently, but by incessant baling we get her clear again. Three or four times we have been rolled nearly over by short breakers and half filled with water, but she still keeps up. At about 4 P.M. a lump of jagged ice got foul of our sea anchor and cut it adrift! This was a serious matter for our boat was even less under control than before, and everything depends on our breasting the waves. Of course it is quite impossible to recover it again, and we have no means to rig another. The one we lost was a little too light, and the first of the usual three breakers in succession often washed it home on us, leaving the line slack. I put Blomkvist in the bows with an oar out to keep the boat's head straight, and Armitage rigged the jib aft of the mast to steady her and to give her stern way to lessen the force of her meeting the waves, although it increased our drifting. Armitage and I relieved each other in directing the boat's course. The doctor, Fisher, Blomkvist and Child bailed her out, and in turns did duty at the bow-oar.

During the whole of this our second day we only got one or two glimpses of the land through the snow and sleet, which appears to be growing more and more distant, but what part of the land it was we cannot

"THERE WAS LITERALLY NOTHING FOR IT BUT TO TRY AND WEATHER IT OUT IN THE OPEN"

distinguish. We all in turns try to get a little sleep, but it is out of the question with the seas continually breaking over us! We are in a rather uncomfortable plight, wet through and through, famishing from want of food which we are unable to get at, and chilled to the bone. Although, strange to say when, especially on duty in directing the boat's course, I experienced the very greatest difficulty in keeping myself awake, and once or twice nearly dropped off in spite of my teeth. Everything we possessed is drenched, and we ourselves are nearly exhausted with hunger, cold, and want of sleep. We also worked hard all the time. In this manner we spent another night, the gale still howling around us with unabated fury. Barometer at about noon read 29.40 (corrected to standard at Cape Flora 28.80).

CHAPTER XV

A SPECTRAL SKY AND PHANTOM SHIP

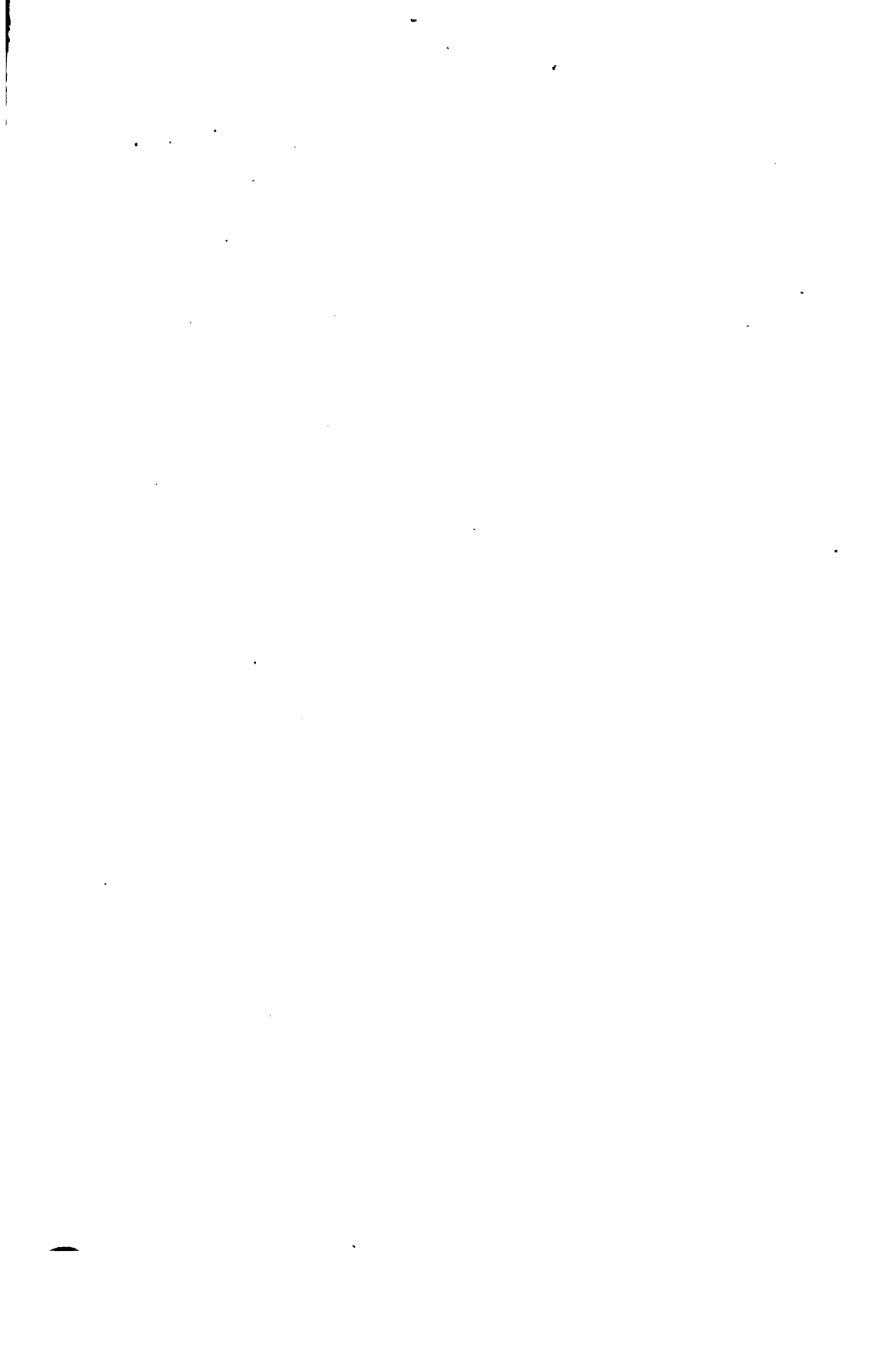
July 30th, Tuesday.—The gale blowing as hard as ever, but now from the north and north-west, with constant snowstorms ; and the swell and cross seas very high, the latter being often very tumultuous, constantly nearly swamping us with volumes of water. How the boat kept on the surface is a wonder !

Several times during the day I noticed a very remarkable appearance in the sky as the wind brought up the snowstorms. It appeared as if laths of wood were irregularly distributed over the sky, even to the zenith wherever the nimbus clouds of the snowstorm covered it. On the northern horizon appeared three poles exactly resembling the three bare masts of a ship with the hull hidden by the high waves. These masts were white and at equal distances from each other—quite suggesting a phantom ship. The laths, also white, appeared straight, and the edges ran parallel to each other. They all were of a uniform breadth, non-luminous, and entirely suggested inch laths. There was no sun visible.*

The boat had now become very heavy and deficient in buoyancy, owing to everything we had on board being drenched with water, and as she rolled she lopped over water first on the starboard and then on the port side. To remedy this as much as possible and to give her more

* I have never been able to obtain an explanation of this phenomenon neither can I in any way offer one.

"IT APPEARED AS IF LATHS OF WOOD WERE IRREGULARLY DISTRIBUTED OVER THE SKY"



freeboard, we threw overboard several articles which could best be spared and were heavy, and so lightened her considerably. It was absolutely necessary, and we sacrificed all we could part with. The tiller had given way, and Child made another from a harpoon staff. Our position was very precarious, and although no one said anything, every man felt that the chance of life was exceedingly small, and that in all human probability we were bound for the bottom. One or two afterwards remarked that they thought the cairn and record on Cape Neale would be the last news any one would hear of us.

At 4 P.M. there came a lull in the gale, which was now from the west-south-west, and the horizon partially cleared, showing the nearest land very dimly, which we concluded to be Cape Grant; but it was too far away (about forty miles) for us to be at all sure, bearing about north-north-east (true) of us. Seeing a chance of getting out of it, we set the reefed lug and jib, and determined to try and run down to it, although the wind was still very strong, blowing from a moderate gale to a strong breeze.

After about six hours' sailing, fairly racing through the water at fully five to six knots an hour, so that collisions with ice were a serious danger, necessitating my keeping a man in the bows as look-out, we reached the land, which on nearer approach proved to be Cape Grant; and we ran round to the north-east side, hoping to find it sufficiently protected by the headland to enable us to land without damaging our boat or drowning ourselves. She, however, got nearly swamped, and loose ice came thumping in upon her with the sea and stove a plank in as we ran for the narrow beach. Owing to their weakened condition, Armitage, the doctor and Child all got duckings in getting ashore; but this, I think, made little

difference, as we were all as wet as we could be already. We at last got everything out of the boat, and hauled her up on to the very narrow beach. We were all of us more or less weak, and we had considerable trouble in doing this. Blomkvist and I were the strongest of the party, but we didn't feel any the better for our late little entertainment. Two or three were very groggy, and could hardly walk. We had had no sleep and nothing to eat but a biscuit or two each since leaving Cape Neale three days ago, except Child and I, who had a raw dovekie each, it being the only thing in the way of food reachable. The others I could not induce to share this rough-and-ready raw repast, but all replied, "I will have a little presently." Before the lull in the gale occurred we were speculating upon the probability of having to make for Novaya Zemlia if it continued to drive us to the south-east, and reckoned up our provisions. We have had an exceedingly near squeak for it, and it was very nearly ta-ta on many occasions. All are mightily glad to be on firm ground again.

On landing we each had a nip of the little that remained of our port wine, and I proposed "The health of the *Mary Harmsworth* and the lady whose name she bears," and coupled Armitage's name with it. His nautical knowledge and experience was of considerable service to us. All my fellows have behaved extremely well, and if we had gone to the bottom would have done so as becomes men. We found all our spare clothes soaked and all our property dripping with water. The get-up of some of our party after attempting to change was most ludicrous. One appeared without breeches, but with a very damp blanket wrapped kilt-wise around his lower person. Another presented himself in a complete suit of oil-skins over very moist underclothes; a

third in a long oil-skin coat—what he had on underneath is a secret known only to himself. A fourth without boots but in a pair of cloth moccasins, and in my leather coat. I had to dispense with underclothes, as they were saturated, and wore a pair of very damp breeches, which seemed to be somewhat drier, next to my skin. All my clothes were more or less soaked. Still, a jollier party never collected in a camp, but then were we not heartily glad to be so far safe after our battle with the gale? Our appearance caused great amusement and endless jokes. We all huddled together on the floor of our little tent, and slept soundly until midday next day in spite of our wet clothes and the cold, as it was snowing most of the time, and the thermometer hovered about freezing point; this with the damp air and high wind made it a bit chilly, especially so to people in our circumstances. However, we had the satisfaction of knowing that we had made a successful journey and, but for the gale blowing us off the coast, would possibly have been even more so if we could have got through the ice around Cape Mary Harmsworth. I hope yet to have another try if the weather will allow us and the boat is not too much damaged.

The cape to the west of Cape Lofley I have named after Mrs. Alfred Harmsworth, "Cape Mary Harmsworth."

The bay between Cape Mary Harmsworth and Cape Lofley after Baron Nordenskjold, "Nordenskjold Bay."

The bay between Capes Lofley and Ludlow after Carl Weyprecht, "Weyprecht Bay."

The glacier reaching from the west side of Cambridge Bay to Cape Mary Harmsworth after Julius von Payer, "Payer Glacier," who together with Weyprecht were the brave discoverers of Franz Josef Land.

The bold, prominent rocky headland at the head of

Cambridge Bay after Dr. Fridtjof Nansen, "Cape Fridtjof Nansen."

The glacier north of Capes Stephen, Grant, Crowther and Neale after Lieutenant Robert E. Peary, U.S.N., the well-known American explorer, "Peary Glacier."

July 31st, Wednesday.—The gale is blowing very hard again, and it is evident that we had seized the lull in the storm to run in in the nick of time. We turned out about noon, and spent the rest of the day in spreading out our clothes and trying to dry them, but the moist atmosphere and frequent snowstorms and sleet render this very difficult. We would give something for a fire just to be dry and warm for a change. The swell has much increased, and is breaking heavily and thumping heavy ice upon the beach. We had to shift our tents this afternoon, as the sea once or twice washed into them. Cape Grant on this side is a very bad place for a camp, as there is very little space upon which it is possible to put up a tent, as the sharp, jagged, steep talus runs down to the water's edge. The poor old doctor looks very thin and haggard; another day or two of it, I think, would have finished him. We in our tent (Blomkvist, Armitage and I) are now all right again—only a bit stiff; but both the other two look hollow-eyed and played out and small wonder. I have been engaged in writing up my journal of the last three days.

August 1st, Thursday.—We are still storm-bound. We spent the day in drying our clothes, &c., so far as the weather will allow us. The barometer shows indications of an improvement.

All the ice has now cleared out of the bays between here and Cape Stephen, and many largish bergs are drifting about between here and there, gradually passing

south out of Nightingale Sound. Much ice is also coming down the channel.

August 2nd, Friday.—There is less wind to-day, but a heavy swell is still running. The beach is much encumbered with ice blocks, and at present it is quite impossible to launch the boat, as it would be smashed at once.

Armitage and I walked down, or rather clambered down to the depôt of provisions on the south-east front of the Cape, and added various provisions which we can spare if we find it impossible to attempt to round Cape Mary Harmsworth this season. I find on a closer examination that our boat is much damaged, but I hope that we may fix her up well enough to try it. The provisions may come in for some unfortunate castaways or for ourselves some time or other.

The depôt now contains in a sack—

Ham, 18 lbs.	Rump Steak, 8 lbs.
Mutton, 14 lbs.	Sausage, 4 lbs.
Beef, 14 lbs.	Cocoa, 1½ lbs.
Butter, 4 lbs.	Pressed beef, 4 lbs.
Milk, 2 lbs.	Tea, 1 lb.
Soup, 12 tins.	Sardines, 6 tins.
Beef tea, 6 tins.	Flour, 60 lbs.

Above this depot, which is carefully covered with heavy stones, I left a Jack upon a seven-foot bamboo staff.

August 3rd, Saturday.—A heavy swell is still coming in upon the beach, and the wind is blowing very fresh from the east-north-east. We are getting a little more comfortable, as some of our clothes are now dry, this being the fourth day we have been employed in getting the water out of them. My guns, too, are much occupying my attention, as I fear the salt water will much damage them, and I am very particular about keeping

them absolutely clean and free of rust. I have no belief in a sportsman who neglects his guns. The weather is cold and quite overcast.

August 4th, Sunday.—The swell now shows signs of going down, and the wind has dropped almost entirely, but owing to the heavy swell that is pounding huge rounded masses of ice upon the shore, we cannot launch the boat until it dies down. I am getting rather tired of staying here. I set Blomkvist to caulk and repair the boat, which is very leaky, being much strained during the gale, and has a plank stove in and three ribs broken.

The weather has much improved, and the sun has appeared to-day. About midnight Armitage and I climbed the talus and shot sixteen looms for the pot.

CHAPTER XVI

THE STORM SUBSIDES

August 5th, 1895, Monday.—The swell having quite subsided and the weather looking better, I decided to make a move to the Cooke Rocks between here and Cape Stephen to get a change of scene. After cutting a road through the stranded ice-blocks on the shore, we launched the boat at 7.30 P.M., and started to row along the glacier face, keeping out of harm's way from falling ice, towards these rocks. A large quantity of ice has come down Nightingale Sound, and is hanging off the bay and towards Cape Stephen, and numerous bergs are drifting with it. The sun has now come out, and large fragments of ice are constantly breaking off the glacier face with a noise like thunder, causing a swell, which reaches for a long distance from where they fall into the sea. I saw to-day a large berg split into two, and the two portions topple over and collapse in the sea, causing a swell to reach for a mile from where it happened. It was a very fine sight, and one incredible to the uninitiated, as the berg a moment before looked quite the embodiment of solidity, a second or two later it had practically disappeared.

When nearly across the small bay we saw the ice rapidly coming in upon us from the east with the westerly running tide. We rowed as hard as we knew how, to avoid being caught between it and the high glacier face, and after a stiff struggle reached the rocks, about

six miles from Cape Grant and four from Cape Stephen, about 11.30 P.M. A bay about four miles deep runs up between the Cooke Rocks and Cape Stephen, entirely bound by glacier face, and away back from the shore, about a mile or a mile and a half, a few small black rocks jut out of the ice, indicating probably the original

AFTER THE GALE—CAPE GRANT

limits of the bay beyond which the glacier has extended. This is a very bad spot for hauling a boat out; there being very little shore, and the rocks run out into the water. In doing this, weakened as she was by the gale and the landing upon Cape Grant, she now got very badly stove in and two ribs entirely gave way. She is a very old boat, and many of her timbers are quite rotten and soaked with water. She is an enormous weight and fearfully heavy to pull.

We temporarily patched her up as well as we could, and after a great deal of trouble launched her again, and quickly jumped into her as soon as she was in the water and rowed for all we were worth, as we thought she would sink, to a narrow strip of sand, where at low water there was just room to turn her over and enable us more thoroughly to repair her. This we managed to do without mishap. Upon a raised beach (fifty feet above the present sea level) we found a pine tree of considerable age, twenty feet long, which had recently been turned over—by a bear we found on a closer examination. Below and under this raised beach we found an exposure of sandstone *in situ* containing plant remains. Above the raised beach is the talus, running down from the basaltic cliffs (500 feet high by aneroid.) There is a fine example of columnar basalt on the north-east front of the cliffs. I took photographs of the sandstone exposure and the cliffs.

We took a P.M. observation for longitude before leaving Cape Grant. I held a council as to again attempting to round Cape Mary Harmsworth, but came to the conclusion that it is now impracticable under the circumstances. There is every sign, too, of the short summer, if such one can call the season that passes for summer here, coming to an end. The sea, too, is getting filled with ice, much having come in from the east.

August 6th, Tuesday.—We erected a cairn of stones on the site of our camp, and in a tin, attached to the flagstaff with a Union Jack upon it, we left the following letter :

“THE JACKSON-HARMSWORTH POLAR EXPEDITION,
“August 6th, 1895.

“Six members of the Jackson-Harmsworth Polar Expedition landed here on August 6th, 1895, in their

boat, the *Mary Harmsworth*, having succeeded in exploring the north-west coast to a cape west of Cape Lofley. When west of Cape Lofley we met with much ice and encountered a gale of wind from N.N.E. We weathered it out in the open from the 28th to 9.30 P.M. of the 30th of July (with a sea anchor, &c., but which got cut adrift by ice on the second day), when during a lull in the gale we ran into Cape Grant, distant then from us about forty miles, where we were storm bound for six days. We intend now to proceed to Cape Flora, calling at Cape Stephen and Bell Island.

"Our boat is much damaged and leaks badly, but we are repairing her.

"We have carefully mapped the whole coast, and laid down various positions by astronomical observations taken ashore.

"FREDERICK G. JACKSON,

"Commanding the Expedition."

On the envelope I wrote :

"Please forward a copy of this to Mr. Harmsworth, and replace this letter in the tin."

The doctor found a vein of lignite about three hundred feet above the sea, and *in situ*, composed of pressed vegetable matter. It burns freely, and, but for the distance from Cape Flora, would be useful as fuel. I found a similar lignite to the north of Cape Richthofen in 1895. Also fossiliferous sandstone under the basaltic cliffs, and a quantity of very fine bituminous shale, which burnt fiercely. Plant remains were very distinguishable in the sandstone. Fisher found some specimens of *Potentilla* here.

These rocks were unnamed by Leigh Smith, and the

bay on the north-east side is likewise neglected. I sent Fisher and the doctor to the top of the glacier to make sketches of the rocks and bay and to take a few bearings with my prismatic compass. The rest of us spent most of the day in repairing the boat.

We made a fine fire of the large pine-tree we found on the raised beach and further dried our still damp clothes. That driftwood was a perfect God-send! We took a P.M. observation for a longitude. I counted seventy-three bergs in the sea off here. Some are a good size and of all shapes.

On the raised beach, fifty feet above sea-level, Fisher found about a dozen plants of *Potentilla* on a dry, sandy soil, close to the crumbling edge. There are nineteen species of plants here, but *Potentilla* and *Sagina* are the only notable ones.

August 7th, Wednesday.—Armitage took a meridian observation for latitude to-day.

To the staff of the flag on the cairn I tied an empty .450 Henry Express cartridge-case plugged with a bullet containing the following note :

“ THE JACKSON-HARMSWORTH, POLAR EXPEDITION,
“ *August 7th, 1895.*

“ A letter is concealed within a tin tied to the foot of this flagstaff under the stones. Please make a copy of it, which forward to Mr. Harmsworth, and replace the original.

“ FREDERICK G. JACKSON,
“ Commanding the Expedition.”

Having finished repairing the boat at 10 P.M., we packed up and set out across the bay for Cape Stephen, where we arrived at midnight. We had a moderate breeze from E.N.E. the greater part of the way, but

after getting under the land it died down, and we had to take in the sails and row as usual. Wind has not favoured us on this journey.

We landed on the south-west side of the point in a sandy cove, and found an excellent spot for a camp near the beach. After having some food we walked round towards Baxter Bay, Fisher and Dr. Koettlitz going with us to do some botanising and geologising. Fisher tells me it is a very good spot for his department, as all specimens that he has obtained elsewhere are present here. There is a good-sized bay running in about four miles between here and the last camping place, surrounded by glacier face, with the tops of rocks jutting out of the ice like nunataks at some distance back from the glacier face, showing the original dimensions of the bay. The country behind is high and entirely ice-covered, and is wild and desolate looking in the extreme.

Cape Stephen has a large exposure of rock. There is at least one old raised beach one hundred feet above the present sea level, and a talus from the rocks averaging five hundred feet.

Looms, rotches, dovebies, mollymokes, and glaucous gulls have young in their nests on the cliffs.

Blomkvist obtained three of the latter from a nest this evening, to replace those drowned during the gale off Cape Lofley.

On the south-eastern side there are more plant species than on any other cape, the only absentee being *Pleuropogon*. The western side of the cape is extremely barren. There is a corrie on this side from which run numerous rills over a flat beach bare of vegetation. The summit of the cape is a plateau, free from snow on its southern half. A starved lichen and moss here and there represent the plant life there.

On the east side of the cape is a thaw-water pool 120 yards long by 60 yards wide, and at its southern end is a spongy mossy depression, such a spot as, Fisher tells me, *Eriophorum* might be looked for, but was absent. *Cyperaceæ* are also absent. Even *Juncus biglumis* and *Luzula congesta* prefer the higher bank above. *Potentilla* is much more luxuriant than elsewhere in this part of Franz Josef Land.

August 8th, Thursday.—We took P.M. observations for longitude, and then Fisher, Armitage and I ascended Cape Stephen on the south-west side, and after a hard and rough climb reached the summit, upon the highest point of which we erected a cairn, and left a record in a tin among the stones at the top of it. The altitude, by sextant observation, of Cape Stephen is 792 feet.

The flat, stony summit was partially clear of snow, but the temperature was hovering about freezing-point, and the snow had a frozen crust upon it. A strong wind was blowing, rendering it decidedly cool in spite of the sun. I saw a fox on the plateau, but it was too wary to let me get within shot of it. I took bearings of all the important landmarks within sight, and made sketches of the various coast lines.

On returning to camp I ascended the talus and shot twenty-seven looms for our larder.

Dr. Koettlitz found a portion of an old reindeer horn, half buried in mud twenty-five feet above the present sea level, showing that reindeer once lived upon these islands, but with the advance of the ice-sheet now covering them have died out. Mr. Leigh Smith found an old horn upon Cape Flora in 1881, and we also found another on the same cape. The doctor has also found the head and skeleton of a bull walrus about the same height above the sea here.

The weather has been very pleasant to-day—clear and sunny, with a cold westerly breeze. We erected a cairn on the south-west point of the cape, at the foot of the talus, on a raised beach about seventy yards from the shore, over which I placed a Union Jack on a bamboo staff, and within a tin, concealed among the stones, the following letter and the cards of the crew of the *Mary Harmsworth* :

"THE JACKSON-HARMSWORTH POLAR EXPEDITION,
"August 8th, 1895.

"Six members of the above expedition landed here at 11.30 P.M., on August 7th, 1895, in their boat the *Mary Harmsworth*, having returned from exploring the west coast to a cape twelve miles to the west of Cape Lofley. A strong gale overtook us at that point, and we lay-to, attached to a sea anchor from July 28th, till the evening of July 30th, when a lull in the storm enabled us to make Cape Grant, then forty miles to the north-east of us, which we reached at 9.30 P.M. Here we were storm-bound for six days.

"To-day we ascended Cape Stephen, upon the highest point of the summit of which we have erected a cairn, leaving a record in a tin among the stones at the top.

"We intend to proceed to Bell Island *en route* for Cape Flora to-morrow.

"FREDERICK G. JACKSON,
"Commanding the Expedition."

"We have erected cairns, upon which we have placed Union Jacks, and records within tins on all the capes between here and Lofley (Lofley and Ludlow excepted, as upon them landing is impossible owing to their being surrounded by a glacier face).

"Please send a copy of this record to Mr. Harmsworth, replacing the original."

To the flagstaff above the stones of the cairn I tied an empty .450 Henry Express cartridge case, containing the following :

"THE JACKSON-HARMSWORTH POLAR EXPEDITION,
"August 8th, 1895.

"A letter contained within a tin is concealed among the stones at the top of this cairn at the foot of the flagstaff.

"FREDERICK G. JACKSON,
"Commanding the Expedition."

There are a few pieces of drift wood (chiefly pine) on Cape Stephen of considerable age. Some are far above the present sea level. No particular aspect of the Cape appears to be favoured more than another.

The doctor found here a bed of hard calcareous sandstone under the raised beach near sea level. This bed is *in situ*, and contains plant remains, in which the stems and leaves can be plainly seen. The doctor also obtained a piece of black lignite up the talus at an altitude of about three hundred feet above the sea, composed of plant remains. On the surface is noticeable a fan-shaped leaf, possibly *Ginkgo*. Both he and Fisher have been most energetic in making examinations, collecting for their respective departments, and so far as possible the various specimens have been labelled on the spot.

August 9th, Friday.—Took a meridian altitude of sun for latitude, and a P.M. observation for longitude to mean with yesterday's. We then struck camp, and loaded up the boat. While so engaged large quantities of ice began to come down Nightingale Sound, driving

fast with the tide and current. We took some food, and waited for it to drift clear. The ice opening a little, we at last started for Bell Island at 8.30 P.M., having an exciting race with the moving ice; and after some hard rowing managed to get clear of it without mishap. We then set the sails for an hour or two, but the boat drifting away very much to leeward, we were afraid of being driven out to sea again. To avoid this we lowered the sails and set to work to pull against a considerable swell coming in from the north-east, which took all the "way" out of her, and made rowing very hard work indeed. The weather was very thick, rendering any land indistinguishable the greater part of the time.

At 4.15 A.M. we reached the end of the long spit upon which Leigh Smith's hut stands on Bell Island, but had to row all round it and up Eira Harbour, which was now clear of all but detached cakes of ice from five yards to fifty yards in diameter, to find a place suitable for landing upon.

Landing near the hut was out of the question, owing to the shore all round being bordered by a glacier face from six to ten feet in height, and the ice extending back to from fifty to one hundred yards from it. This had evidently not been here in Mr. Smith's time.

August 10th, Saturday.—After having some dinner, Armitage and I walked up to Leigh Smith's hut. After a careful search we found two tins nailed upon the wall. (These tins had not especially attracted our attention on our previous visit, as we supposed that they had been so fixed to hold lights.) One contained a record of the wreck of the *Eira*, and was deposited in September 1881; and a second tin contained a letter addressed to Richard Neale, M.D., and a second record written by Mr. Leigh Smith. (I had been told that the letters were

BELL ISLAND AND EIRA HOUSE

deposited in a small cask ; therefore we did not expect to find them in tins. The only keg in the hut we opened on the previous visit, but found nothing in it at all.)

I copied the first record (that of 1881), and replaced it in exactly the same condition and spot as I found it. It ran as follows :

“The *Eira* got nipped by the ice on the 21st of August, 1881, about a mile east of Cape Flora, and went down before many things could be saved. All hands got safely to the south side of Cape Flora, and built a house, as the ice was too much packed to allow them to go to Eira Harbour.

“We intend to pass the winter at Cape Flora, and in the next summer try to get down to Novaya Zemlia in the boats.

“If we are not able to get away we must wait where we are for the chance of a vessel coming to our relief.

“Cape Flora is about ten miles east of the house in Eira Harbour.

(Sig :) “B. LEIGH SMITH.

“August 31st, 1881.

“P.S.—We are very short of provisions, and cannot hold out for more than a year, even with the help of walrus, bears and birds.”

It was wrapped in medical oiled silk within pieces of paper, and the whole enclosed in a small mustard tin, and tied up with a piece of string.

The second tin, containing a record dated June 14th, 1882, by Leigh Smith, and Dr. Neale's letter, I carried away to send to the writers by the ship next summer.

We camped on the beach about one-third of the way up Eira Harbour, which was the nearest spot to the hut

upon which we could pull our boat out. The rest of the shore of the spit was ice-faced. The western entrance of the harbour would make a good winter harbour for a ship, but I would not take her far in or she might not get free in the summer, or at all events not until very late.

I shot two red-throated divers on a pond of thaw-water about half a mile to the east of the camp. I got them to the bank by embarking in one of the end sections of the canvas boat. We are repairing the small dingy, which is lying by the hut, and intend to take her to Cape Flora to send back to England. She has a timber split from stem to stern, and leaks like a sieve. A bear has clawed a large hole in the larger boat near the beach, and in addition it is frozen down and full of ice.

I took bearings of all the prominent points of the country to be seen from here, and made sketches for my maps.

The flag-staff on the top of the hut had been much gnawed by bears, showing how deep the snow must have laid to enable them to walk on to it. There is still a quantity around unmelted, and an extensive flat of deep snow about seventy yards to the south-east of the hut. It is difficult to account for this, except by the extreme depth of the drifts, as it gets the sun all the twenty-four hours, and it is only a few feet above sea level. Here there is a wide stretch of raised beach unsuitable for vegetation, excepting certain low forms in the numerous pools of thaw-water. Stunted and starved plants of fifteen species continue to maintain an existence wherever there is sufficient soil.

Copy of second record by Leigh Smith :—

"CAPE FLORA. TEN MILES E. OF EIRA HARBOUR,

"*June 14th, 1882.*

"We all got through the winter very well and not uncomfortably. No scurvy and no serious illness. We killed and have eaten thirty-four bears and twenty-four walrus, and about two thousand five hundred looms.

"The boats are all ready to start for the south.

"The ice broke up yesterday, but we have to get some walrus, bears, and looms to make up a sufficient stock of provisions.

"We must go where the open water takes us, but shall try for Nova Zembla in preference to Spitzbergen.

"We had no very cold weather until after Christmas.

"There was plenty of water in October, and navigation seemed to be possible up to Christmas. Bay ice formed all the winter, but it constantly broke up again, and it was not until the third of March that it froze into a solid mass and formed a land floe six or seven miles wide.

"Walrus, male bears and foxes were about all the winter.

"There has been a large water to the south ever since the beginning of May and so far as we can see to the west.

"Birds began to come back in February.

	Max.	Min.	Mean.	Highest.	Lowest.
1881					
October . . .	14.8	+3.1	+8.95	47	-11
November . .	+4.3	-6.86	-1.25	29	-22
December . .	+15.13	-5.55	+4.79	31	-24
1882					
January . . .	-21.5	-29.9	-25.7	-4	-43
February . .	-20.4	-33.1	-26.7	+25	-43
March	+4.74	-7.5	-1.4	+24	-43
April	+5.7	-8.33	-1.25	+23	-18
May	+28.25	+15.15	+21.8	+36	0

"-43 was the lowest temperature that any of our thermometers would show. We had much stormy weather, wind mostly easterly until the 20th of May. Since the 22nd of May it has been blowing from the north-west, and yesterday we had a whole gale."

The above record was unsigned, but in Mr. Leigh Smith's handwriting.

The altitude of the rock of Bell island is nine hundred and thirty-eight feet, and the rocks on Mabel Island seven hundred and forty-seven feet, both by sextant observation.

August 11th, Sunday. — About 1 A.M. Armitage, Fisher and I pulled over to Mabel Island to explore it. It is a far more suitable spot for a house than that upon which the hut stands on Bell Island. There is about a mile of a level raised beach stretching from the cliffs to the sea and several large ponds of water (one about five feet deep in places) fed by the snow melting in summer. There is also a fair amount of vegetation, and it is well protected from northerly winds on the south-east side of the cliffs.

I found a very old walrus skeleton three quarters of a mile from the present sea beach, and I shot a cock diver (red-throated) and a young one on one of the ponds. No other diver was to be seen, so the cock was apparently left to act as nursery maid. It is a good spot botanically. I could see no signs of the oars said to have been placed on the glacier by the Eira party in 1881. Facing south with high rocks to moderate the northerly winds there is here a suitable beach for an improved flora. In three hours Fisher found more forms than on the other capes we have landed upon and examined, including the most rare and beautiful little grass *Pleuropogon sabini*, Br., origin-

ally discovered on Melville Island by Sir Edward Sabine, and afterwards on the other islands in that region, but not in Grinnell Land, Greenland, or Spitzbergen.

Pleuropogon is the only genus peculiar to the arctic regions.

There are other plants of some interest here, viz., *Luzula campestris*, var. *congesta* Lej., *F. glabra* (typical *L. congesta* is found in Greenland and Grinnell Land, but not in Melville Island or in Spitzbergen).

This was found on Cape Stephen and on Cape Neale also.

Saxifraga stellaris, *L. v. vivipara* is here, but although the soil is apparently as suitable as that of Cape Gertrude and Cape Stephen it is very stunted. This plant is very rare in Greenland where it has been seen between 70° and 75° north latitude on the east coast by Sabine. On the west coast it was found by Brown at Jacobshavn and at Egedesminde by Nares Expedition (Hart), and Taylor found it on the Kickerline Islands in Cumberland Gulf. In Spitzbergen it is not rare. All the above localities are in much lower latitudes than the Franz Josef Land positions.

We got back to camp about 5 A.M. and had dinner (that of August 10th) and turned in.

We had breakfast at 2 P.M., and I then walked up to the Eira House (this name is printed in large letters over the door in pencil) and had everything securely fastened up. I hung the key of the inner door up on a nail inside the porch and tightly secured the porch door.

I left in the house 14 lbs. of beef, 2 lbs. of pressed beef, 4 lbs. of coffee, 2 gallons of spirit, and 2 lbs. of sausage, in case of emergency on some future occasion.

At 8.30 P.M., having loaded up, we started to pull through Eira Harbour for Cape Flora, as the sea is

becoming daily more ice encumbered than I quite like, and seems to be increasing.

As there was only a light easterly breeze we could not sail. We found a reef stretching right across the southern entrance and reaching from the point of a spit on Mabel Island to a short spit on Bell Island. In the centre, however, we found a channel with about four feet

THE "MARY HARMSWORTH" AND CREW

of water, through which the tide was running fast south. It was low water.

We met with a good deal of ice off the entrance to Gunter Sound, and on nearing Cape Flora we had a good deal of trouble with it as the tide was running rapidly west, moving it along very fast, and our boat being old, much damaged, and leaking badly, and with two boats in tow, would not stand one touch with it. She also was fearfully heavy, making rowing against the

tide very tough work. She had too much in her for us to pull her out on the ice without unloading, which takes time, and as a rule when it is necessary to pull a boat out on to the ice to avoid being crushed by it, it has to be done at a moment's notice and smartly.

When off Cape Flora we rowed hard for the nearest point of the land to avoid being cut off by ice, and managed to reach it to the west of the point near the glacier. Here we had to wait for an hour to allow the pack which was grinding along the land to open and the tide to slacken. I landed and walked to the top of the ridge to see the condition of the ice in the bay, and finding it was there more stationary, being out of the tide-way, I returned and succeeded in piloting the boat round. We landed near Eira Cottage at 7.30 A.M. (of August 12th). The weather has been very foggy all night.

CHAPTER XVII

BACK AT THE HUT

August 12th, 1895, Monday.—We found that the ice off Cape Gertrude and the bay between Cape Flora and there had broken up, only a little ice remaining, but the sea to the east and south was full of drifting ice, and the water space between here and Bell Island is now much ice-encumbered. All the ice-foot at Flagstaff Point has disappeared leaving the rocks bare, showing a striking difference in the appearance here between this year and last. I am told by Heyward that the gale at the end of July washed it away. To judge by this season I am not at all sure that August, as has hitherto been assumed, is a better month for reaching Franz Josef Land than the end of June or during July. August was a bad month last year and the sea is rapidly becoming now as ice-blocked as it was then, although during June and July the sea was comparatively ice free, and on June 21st, 1882, Leigh Smith found open water reaching eighty miles south of Cape Flora.

During the end of July the fjords north discharge large quantities of ice into the sea to the south of Franz Josef Land, and probably the Kara Sea, too, breaks up towards the end of July, pouring out masses of ice west along the Southern shores. During May, June, and July there was a great preponderance of winds from north to north-east, and from north to W.S.W., which tend to blow the ice off the land and to clear the western



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portion of the Barents Sea.* During the first four days of August sixty hours wind was recorded, averaging a force of nearly four (Beaufort's notation) from south-east and E.S.E. which have a contrary effect, (Table) were registered at Cape Flora, perhaps accounting for the sea becoming ice-blocked.

We got up to the hut at 8 A.M. and cooked some "dinner." It took us eleven and a half-hours' hard rowing to come from Bell Island, and as we had only had some cheese and a little grilled oatmeal (we had been out of biscuits and some other things for some days), which we had unsuccessfully tried to make into cakes, but the result was a mass resembling very dirty sawdust. We were quite ready for "dinner." We then turned in at 10 A.M. and had breakfast at 5 P.M.

Everything has apparently been going on well during our absence, and Heyward, the Governor of Northbrook Island, has acquitted himself very satisfactorily. His Excellency looks, however, very much out of repair about the seat of his trousers, and as if he and soap and water were not on speaking terms. He has done very well though.

After breakfast we carried up the remainder of our gear from the beach, and straightened things up generally.

We have had a rather risky and adventurous journey, but a successful one from every point of view.

I should, however, have liked to have rounded Cape Mary Harmsworth and have seen where the coast goes to round the corner. Next summer in the *Windward* I hope to do this, at least, however. Still, this one will be, I think, a recorded journey among Arctic boating expeditions. We have reached the furthest north-west limit

* See table in Appendix.

yet attained here, and have had the good luck to be able to go considerably further even than Mr. Leigh Smith was able to do in a steamer in two years.

We have mapped the whole coast and have discovered fresh coast-lines both to the west of Cape Lofley and in Cambridge Bay.

We have landed upon and explored all the headlands between Cape Flora and our limit, which no one has landed upon before, and have taken astronomical observations for latitude and longitude upon them.

We have taken meteorological observations throughout the journey, and have made valuable collections of all kinds. I fear that our boat will never be able to go on a similar trip again, for besides being very old with very rotten timbers in many places, she had such a mauling during the gale and since, that she is in a very bad condition and leaks like a sieve, and owing to her old condition I fear cannot be repaired effectively. She does not sail well close to the wind and makes an awful amount of leeway.

The boating season here is certainly over now. The winds have now got back to the winter quarter, E.N.E. and E. instead of the summer N.W. The days have got very cool, the weather generally unsettled; and the sea is now very much ice-encumbered.

With a steamer or even a large wooden launch we could have done much more, and a lot of good work might be done here by wintering with a steamer or having a launch of such dimensions as would stand bad weather with comparative safety. It is, however, a dangerous coast for any kind of craft, but especially for a small, open boat like ours only under sail.

There is a great deficiency of anything approaching a harbour, and the whole country is glacier-bound, pre-

venting any possibility of landing except at long intervals, where rocky capes crop out through the ice-cap, and even there it is often very difficult to find a suitable bit of beach to land upon. A steamer by its greater speed might, however, run for shelter to such places as Gray and Cambridge Bays, or if there is not too much ice, could weather out a gale in the open with comparative safety, whereas in the case of an open boat it is more than even betting that she goes to the bottom.

We had a wonderful escape at the end of July, and I don't think it is possible for the Expedition to have a closer shave.

We find on comparing the aneroid we had with us with the standard mercurial barometer at the hut, that it registers six tenths too high, making an increase of three tenths since we left on July 11th. This had something to do with letting us in for the little entertainment we had at the end of the month off Cape Lofley. As we had confidence in a high glass such as we then had, being unaware that it showed nearly half an inch more than it did a fortnight before.

We have been away a month and four days. We met with contrary winds and calms both on our outward journey and returning, and for every mile we sailed we certainly pulled four.

The following are the weights of the crew of the *Mary Harmsworth* taken before starting and on our return :—

	July 10th.		August 12th.
Armitage . . .	182 lbs. (= 13 st.)	...	174 lbs. (= 12 st. 6 lbs.)
Fisher . . .	159 lbs. (= 11 st. 5 lbs.)	...	163 lbs. (= 11 st. 9 lbs.)
Dr. Koettlitz . .	176½ lbs. (= 12 st. 8 lbs.)	...	176½ lbs. (= 12 st. 4½ lbs.)
Child . . .	171 lbs. (= 12 st. 3 lbs.)	...	155 lbs. (= 11 st. 1 lbs.)
Blomkvist . . .	207 lbs. (= 14 st. 11 lbs.)	...	202 lbs. (= 14 st. 6 lbs.)
F. G. Jackson . .	193½ lbs. (= 13 st. 11½ lbs.)	...	188 lbs. (= 13 st. 6½ lbs.)

Child is the only one of us who has lost considerably (16 lbs.). He had apparently failed to pick up as fast as the others after our splash off Cape Lofley.

Armitage and Blomkvist pull good strong oars. All are good fellows.

On looking at the maps on our return I find we must have been within a few miles of the mysterious Gillis Land, if it exists at all by right in these latitudes, and Cape Mary Harmsworth is possibly upon it. Norden-skjold evidently considers that Petermann had no right to place it where it is now marked on the charts. Its position has evidently been altered on some maps to fit in with the supposed direction of the coast line of Leigh Smith's discoveries.

The grass Fisher found upon Mabel Island (*Pleuropogon sabinii*) which is found nowhere in the world except on the Parry Islands, and sparingly on one or two others of the Arctic North American Islands and on the East coast of Novaya Zemlia is a most interesting discovery, and may throw light upon the vexed question of the distribution of plants.

Geology, according to Etheridge, points to a chain of islands stretching over the pole from Franz Josef Land towards the Parry Islands. Is this evidence in support of it? Hardly with a deep sea to the north.

CHAPTER XVIII.

THE GUN IN FRANZ JOSEF LAND AND GAME LIST

HAVING returned safely from a journey that nearly ended fatally for us, I may here pause and give some account of the sport of Franz Josef Land. It was serious sport for us at times, as our larder and our welfare depended upon our fresh meat supply, which I look upon as a valuable ally to keep at bay that scourge of the Arctic scurvy. Without fresh meat we should have had to fall back upon tinned with the great risk of taking ptomaines into our systems and so contracting scurvy. I never tolerate the waste of game anywhere where I have any control over the matter, and in Franz Josef Land I never allowed life to be taken for the sake of sport alone.

The larger animal life in Franz Josef Land is not great so far as species is concerned. We shot during our first twelve months there over sixty bears ; in the second year twenty-five and the last year only twelve (two when sledging) showing that we had greatly reduced their numbers. And I think that even in a country so rich in animal life as Franz Josef Land is, it would be a question of only a few years to kill out all the larger game there.

Walruses we found to be fairly plentiful, but not in the numbers that they once existed in Spitzbergen and elsewhere, and I more than doubt if it would pay steam whalers to visit Franz Josef Land to take them. It

most certainly would not for more than two years in succession.

Of saddle-back seals we saw exceedingly few ; likewise also the ground seal. The ringed seal or floe-rat of the whalers was the most plentiful, and upon these bears chiefly depend there for existence. Of course they have no mercantile value owing to their small size, and the difficulty of taking them in numbers. Of the Right Whale, *Balæna mysticetus*, we saw no example throughout our stay in the north, although they have undoubtedly existed in the sea to the south of Franz Josef Land, for old bones were found by us, some above the altitude of fifty feet above present sea level ; which allowing for the rising of the land or the retreat of the sea at the rate of one foot in a hundred years would give the age of those bones as at least five thousand years.

The probable reason for the absence of the *Mysticetus* to the south of Franz Josef Land is that its principal food the "rice food," as the Scotch whalers call it, is not present in these waters. The sea too is a very shallow one.

Narwhals were seen on two or three occasions only in small numbers, and two shoals of white whales twice.

We never saw any finners, bottle-noses, or any other species of whale besides those I have mentioned. Reindeer although they once lived upon Franz Josef Land have now ceased to exist there. By the advance of the ice-sheet the few survivors were doubtless driven as their last refuge to such spots as Cape Flora and Cape Stephen, where the high rocks keep back the ice and the scanty grasses and lichens in front of the rocks kept life in them until bears, disease or starvation ended their days. On both of these Capes we discovered old rein-

deer horns, and Mr. Leigh Smith found an old antler upon Cape Flora on his second voyage in the *Eira*.

We found a few blue foxes, but very few, and these were so very wary that none were shot, although one young one was captured alive upon Cape Grant, and kept in a pen for a few days. I tried all manner of devices in the shape of traps, snares, and even spring-guns to secure them, but without success.

Of bird-life to replenish our larder, looms were our great stand-by. These useful sea-birds were found nesting upon most of the Capes along the south coast, and afforded us a pleasant change from the rather tough, flavourless bear meat. The rotche or little auk also exist in considerable numbers, and there are besides a few "dovekies."

A few Brent geese were shot and three eider ducks. The former, although occasionally seen in some numbers, owing to their waryness were not easily bagged, and it was indeed a feast-day when we had one for dinner.

Besides these birds there were kittiwakes, glaucous gulls, fulmar petrels, ivory-gulls, snowy-owls and Richardson's skuas which could have been included under the heading of game had necessity required it, but our friends the loom and the bear always protected them from it.

It was however to bears we chiefly looked to stock our larder, and an occasional bear hunt gave us some diversion. I always allowed two or three dogs which showed some aptitude for bear-hunting to run loose during the winter, and had one dog "Nimrod" tied to a rough kennel outside the hut. These dogs would get on the track of a bear on the floe and set up a barking; "Nimrod" would take up the chorus, and thus let us know what was going on.

One of my men and I would then set off in chase

with our rifles, and guided by the cry of the dogs stumble through the mist and darkness over the floes. After proceeding a mile or so, gradually the noise would become more and more distinct, and some dark objects jumping around a large yellow one, from which proceed loud hisses and snarls, would appear in sight.

A halt is then called to enable us to recover our wind after the rough-and-tumble pursuit.



"NIMROD" ON BEAR GUARD

The bear in the meantime has been engaged in making rushes at the dogs, one of which with his tail tucked between his legs, and looking as if he had seen things he would gladly forget runs up to where we are standing.

We then separate and advance from opposite points until within about ten yards of our game, my rule being to approach the animal until the outlines of his head could be distinctly made out. He appears to be a little undecided as to whether to charge us or to beat a retreat; but a dog, taking advantage of his indecision and encouraged by our presence, makes insolent remarks

almost in his ear, and the bear dashes round to retaliate. At the same moment two shots ring out, and poor Mr. Bear rolls over dead with at least one bullet in his brain. One of us then returns to the hut to bring out a sledge party to haul him in. We drag him into a canvas hut reserved for bear skinning during the darkness, and remove his skin and blubber, and cut up the carcass into convenient joints. The dense atmosphere caused by the rising steam in the intensely cold air suggests a laundry in full swing.

Shooting walruses with the modern hard-hitting rifles is a comparatively simple matter. The two rules necessary to be followed are : (1) Shoot them in the head, and (2) take precautions to prevent them sinking on being struck dead, as in nine times out of ten they will do so. The best plan, if feasible, is to harpoon them first, and to follow this up with a bullet in the head.

It was a common sight in Franz Josef Land to see an ice-piece covered with what looks in the distance like a number of black leches, which on nearer approach prove to be walruses, lying sleeping and idly drifting with the tide or current.

The Lee-Metford rifle, with the nickel-covered Government bullet, I found particularly effective with walruses, one bullet only being necessary to knock the head all to pieces. On one occasion a walrus charged us when upon a small ice-piece, and the only portion of his head which presented itself to me as a target was the nose and tusks with its mass of hard, heavy bone lying in front of the brain. One shot, however, from my Lee-Metford between the tusks with the nickel-covered bullet killed the animal dead.

For bears I always used a soft-nosed bullet.

Walruses in the water, especially bulls, are apt to be

dangerous antagonists, being pugnacious, and seem to have a natural love of fighting. Esquimaux and walrus hunters have the greatest respect for them. I have known a cow walrus with a calf "go for" a boat, and with its strong tusks rip open the bottom, rendering it necessary to hurriedly haul it out upon the ice to prevent its sinking and drowning the occupants. Their attacks, too, are frequently quite unprovoked. On the ice, however, they are harmless if there be space for an active man to move around. A large bull walrus weighs as much as 2000 lbs; the cows are, however, much smaller.

The general impression that the Lee-Metford bullet passes through bone without fracture I found to be quite fallacious, but, on the contrary, it quite pulverises bones struck by it; and only on one occasion did I find it drill a hole through bones without very extensive fracture, and that was in the case of the right lamina of the atlas of a walrus. With our doctor's kind help we traced the course and noted the injuries inflicted by over two hundred bullets, and we could always tell at once by the condition of a bone wound if it was caused by bullet from a Lee-Metford or by a Henry rifle by the far greater injuries caused by the former.

In experimenting with the Regulation Government rifle and cordite ammunition, I discovered the interesting fact that oats have a great stopping effect upon bullets fired by it, by slewing the bullet broadside-on after entering a sack of oats a very short distance. My shots were fired at the short range of thirty yards.

I found that in the case of flesh wounds the entirely nickel-covered bullet gives insufficient shock, and consequently is defective in stopping power. Such bullets as the "Tweedie" or the many varieties of the soft-nosed ones "mushroom" sufficiently to overcome this.

Harpoon guns are useful in taking walruses, especially the light shoulder gun with a small harpoon and strong, fine line, such as are used for killing porpoises. I recommend, however, a breech-loading instead of a muzzle-loading action, and the usual steel split-ring shackle on the harpoon requires replacing with a twisted copper wire one.

A hand-harpoon or two of the Norwegian pattern should also always be carried with detachable staves.

A strong boat, a few flensing knives, a steel, a tomahawk, and spare line, to which, of course, must be added the Lee-Metford rifle and nickel-covered bullets, and the equipment for taking walruses is complete.

For taking seals a rifle and seal club are the only things required; but a hunting-sail mounted on a miniature sledge, similar to that used by the Esquimaux, is useful for stalking them on the ice. This is easily made with a piece of pure white cotton or linen and two or three pieces of wood.

For all the various species of Arctic birds No. 2, No. 5, and No. 8 shot will be found useful.

Loom shooting gives excellent practice for driven feathered game.

Behind the hut on Cape Flora rise high basaltic cliffs to a height of 1300 feet, with a steep talus of 600 feet of broken-down debris from the rocks with a sparse covering of grasses, mosses, lichens, and other Arctic plants.

To the rocks as April closes the looms return to sun themselves, and later on to lay their eggs and rear their young.

It was my practice when shooting for the pot to ascend the talus about two-thirds of the way, and wait with my gun for birds flying round or coming in from the sea. I abstained from going up to the top during

the nesting season in order to avoid killing hen birds, the cocks being more generally on the wing.

In the autumn, when it was necessary to kill a large number within a short time, I climbed to the summit under the rocks. Looms are very fast flyers and strong on the wing, and when coming down in front of a breeze one has to be very quick with the gun, or they are out of shot in a second. Excellent sport it is, and on a fine sunny day most enjoyable, with a panoramic bird's-eye view of the point of Cape Flora, the ice-covered sea, with its bergs and fantastic hummocks spread out at one's feet; and away to the westwards Cape Grant rises from the sea, with the white glaciers beyond Bell Island, Cape Stephen and Mabel Island shining in the sunlight.

One rapidly becomes expert with these birds. On one occasion, being challenged by a comrade, I took a hundred in succession, and succeeded in bagging ninety-two of them. Of the remainder six fell wounded into the sea, which we had agreed to count as out of bounds; two, I think, I missed. They fly straight, although very fast, and consequently are not hard to hit. They will, however, sometimes carry away a lot of shot.

We quite satisfied ourselves that bear's liver may be very injurious, producing violent headache from five to six hours after taking it.

I had a quantity of the liver that had affected us bottled up in spirit, and on my return to England submitted it to Professor Vaughan Harley for examination, to whom I am much indebted for the following report:—

“Watery and alcoholic extracts of liver had no action on mice when subcutaneously injected.

“Two mice subcutaneously inoculated with 1 c.c. each

of etherial extract died three days after ; but it is difficult to say if not accidental.

" A dog and guinea-pig given some watery extract had no ill results.

" The quantity, being so small, had to be economised ; and what is left is now being examined for any ptomaine or other reaction."

GAME LIST

DATE	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1894. Aug. 17.	Golden Plover.	Lat. 70° 30' N. 50° 30' E.L.	30 yards.	Was shot by Jackson flying round the ship. Preserved skin.
" 29.	He-bear.	To south of Franz Josef Land.	60 yards.	One shot behind left shoulder, one in forearm. Ran forty yards and fell on the floe. By Jackson.
" 30.	She-bear. She-cub.	To south of Franz Josef Land.	50 yards.	Shot in the water from the ship. The mother had two shots—one in neck and one in base of skull. By Jackson and Armitage.
Sept. 8.	Walrus.	Cape Barents.	50 yards.	One shot in neck. At once sank. Sporting .303 rifle. By Jackson.
" 9.	He-bear.	Cape Barents.	70 yards.	One shot in neck (base). Ran thirty yards and fell. Bullet entered to inner side of left shoulder, below the outer third of clavicle, causing severe wound of pectoral muscles, wounded subclavian vein, fractured 2nd rib on left side, and entered the apex of left lung, which it passed through. Through the posterior mediastinum, severing the descending aorta. Penetrated the lower lobe of right lung, and shattered the posterior part of 6th rib on the right side. The leaden portion of the bullet was found in the muscles of the back, and the nickel portion loose in the thoracic cavity, which was full of blood. Killed by Jackson.
" 9.	She-walrus.	Cape Barents.	40 yards.	One shot through base of skull. .303 sporting rifle. By Jackson.
" 9.	Walrus.	C. Barents.	30 yards.	Sank at once. By Armitage.

DATE.	GAME	LOCALITY.	DISTANCE.	REMARKS.
1894. Sept. 11.	She-Walrus.	C. Flora.	4 yards.	By Armitage. One shot base of skull with .303 Government rifle. Sank at once, but rose in 18 hours, and was recovered.
" 19.	He-bear.	C. Flora.	45 yards.	Shot by Armitage from ship with Martini-Henry. Had grass in the stomach.

Several ringed seals were shot from the ship during August and September, but all sank almost immediately

Oct. 1.	Bear.	On floe C. Flora.	50 yards	First shot in chest, followed by six others in the rump, at from 150 to 250 yards range. After a chase over the floe of four miles, it finally laid down and died, but owing to the darkness the carcass had to be left till morning, but during the night the wind cleared the ice out. By Armitage and Jackson.
" 4.	Bear.	C. Flora.	10 yards.	On the side of a berg near ship. .450 Express rifle. One shot through neck. Two shots in right shoulder by Armitage with .303 Government rifle. Escaped by taking to the water. Jackson's shot in the neck went clean through from left to right. It did not appear to affect him.
" 5.	$\frac{3}{4}$ grown He-bear.	C. Flora.	50 yards.	One shot high up behind left shoulder from .450 Henry Express. One shot with Martini-Henry, lower down, behind the right shoulder. Ran thirty yards and rolled over. By Jackson, Armitage and Burgess.
" 7.	He-bear.	C. Flora.	5 yards.	One shot .303 sporting rifle. The bullet took the following direction: The bear must have been holding its nose elevated. The wound of entrance was a little below and to the back of the left ear. It travelled in a forward, inward and upward direction through the soft parts. Shattered the angle of the lower jaw. Proceeding in the same direction, it shattered the basilar process of the occipital bone and the ethmoid, and entered the brain, where it lodged. This bear had threatened the carpenter, who had gone out for a walk. I shot it on the floe, 350 yards from the ship. Measurements: 8 ft. 1 in. from tip of tail down belly to tip of nose; 7 ft. 9 in. from tip of tail

GAME LIST

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DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1894.				down back to tip of nose ; girth, 7 ft. A very large he-bear. I walked up to within five yards of him before firing, to ensure getting in the shot satisfactorily. He floundered around for a minute or two after falling, and Jackson again shot him in the neck to prevent his damaging the dogs, who were snapping at his legs after being bowled over.
Oct. 14.	She-bear.	C. Flora.	17 yards.	Had started to lay up in a hole in a snowdrift, but was disturbed by the dogs. Had only been there two days. Uncertain if in cub. One shot from .303 sporting rifle. Leaden nosed bullet. Bullet entered below and behind left ear, taking an upward, inward and forward course, shattering petrous portion of the temporal bone, and the whole of the base of the skull, sending the line of fracture through the vault of the cranium, separating the occipital bone from the rest of the skull, with small portions of the parietal bones attached; also otherwise fracturing parietal bones. The left angle of the lower jaw was fractured and also the right, but there the fracture was more anterior than that of the left, extending through the body of the bone. The leaden portion of the bullet was found among the shattered fragments of the bone about the base of the skull. There was great injury of the brain tissue, and extensive hæmorrhage externally from left ear, the wound, and the nose. There was nothing at all in the stomach. She was a young but full-grown bear. Shot by F. G. Jackson.
" 22.	He-walrus.	Floe, C. Flora.	7 yards.	Killed by two shots from .303, by F. G. Jackson. One penetrated crown of skull. One fractured angle of left lower jaw and damaged the jugular vein and carotid artery. Found shells and pebbles only in the pyloric portion of stomach, 13 ft. long. Weight about one ton and a half.
" 26.	She-walrus.	Floe, C. Flora.	5 yards.	

DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1894. Oct. 30.	4 She-walruses.	Floe, C. Flora.	5 to 20 yards.	With .303 (one walrus head very much injured). The entrance into skull was near posterior and lower part of right parietal bone, the direction being downwards and slightly forwards. This caused several fractures to radiate into the temporal bone, and the force being continued downwards and forwards, it broke up the massive petrous portion of temporal bone into several pieces, opening up the middle ear and, still continuing in same direction, fracturing into joint below jaw, the condylar process, being separated from jaw, the right side of which it fractured again in two places. By Jackson and Armitage.
" 30.	She-walrus.	Floe, C. Flora.	5 yards.	Secured and tied up to floe, but lost owing to the pressure of the ice. Shot by Armitage and Jackson.
" 31.	He-bear.	On floe, C. Flora.	15 yards.	
Nov. 9.	She-bear.	In water off floe, C. Flora.	15 yards.	Three-quarters grown. Not pregnant. .303 Government rifle. Temp.: 22° F. below zero. Shot by Armitage and Burgess.
" 10.	He-bear.	On floe.	7 yards.	Killed instantly. .303 sporting rifle. Shot by Jackson. <i>Description of injury and course of bullet:</i> Wound on left side of neck about three inches behind ear. Passed obliquely backwards through muscles of neck. Fractured the axis or second vertebra, in part shattering it into grains as small as sawdust and into numerous larger parts. It also fractured the articular process of third vertebra. The atlas was not uninjured, one of its large transverse processes being splintered. The bullet then continued its course, and was found embedded in the muscles in the right side of neck, about two and a half inches from spine. Pieces of the leaden part of the bullet were found among the fragments of the axis.
" 11.	He-bear.	On floe, C. flora.	15 yards.	Shot by moonlight; by Jackson, three shots .303. The first (1st) was fatal, but he managed to stagger 200 yards after it. <i>Description and course of the three bullets:</i> (and) Wound

DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1894.				<p>of entrance on right side of thorax, penetrating cavity between third and fourth ribs, penetrating left lung, continued on its course obliquely forwards and to the left across the chest, fracturing first rib on the left side. The larger portion of the bullet was found close to the skin by a wound in the shoulder probably caused by a splinter of the lead travelling through. (1) Wound in left side of the neck. Passed obliquely through the soft parts to the right side. The leaden portion of the bullet probably escaped by wound of exit opposite and slightly behind the wound of entrance. Its course was close to the spine, but it left it uninjured. It, however, wounded the cesophagus and also one of the carotid arteries—which one, however, was not ascertained, but there was an enormous amount of hæmorrhage from this wound. (3) Wound of entrance an inch anterior and two inches below left ear. The damage done was unascertainable on account of the frozen condition of the part. Temp. 30° F. below zero and a fresh gale blowing.</p>
Nov. 13	He-bear.	On floe.	6 yards.	<p>At 4.15 A.M. by moonlight. Bear charged at Jackson. Killed by one shot from .450 Double Henry Express (by him). <i>Description of injury and course of bullet:</i> Wound four inches behind left ear. Bullet travelled obliquely backwards and inwards across neck, shattering transverse processes (left) of fifth and sixth cervical vertebrae. It was deflected slightly across spine in front of bodies of vertebrae, entering thorax on right side, and found in apex of right lung. The spinal marrow was uninjured, but there was considerable hæmorrhage in the spinal canal, both within the meninges and between them and the bone. Bullet much mushroomed.</p>
„ 14.	He-bear.	On floe, C. Flora.	15 yards.	<p>With .450 Double Henry Express by moonlight. First bullet knocked him over, but he struggled up again. Second bullet</p>

DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1894.				finished him off. Jackson imitated a seal by lying on the ice and wriggling about, and the bear rushed up to him. <i>1st bullet</i> entered at base of neck on right side just above shoulder. Took a backward and outward direction through muscles until arriving at the spine of the scapula of the same side near the shoulder-joint, which it broke off. Passed through it without fracturing the body of the bone. It then passed on in the same direction, and was found in the blubber of the ribs behind the right shoulder. <i>2nd bullet</i> entered on the right below the eighth rib, passed forwards and inwards, fracturing the eighth rib; passed through right lung and entered the right ventricle of the heart, and passed on through the left auricle into the left lung, where the bullet was found near the apex. A little undigested seal-skin was found in its stomach. Shot by Jackson.
Dec. 28.	He-bear.	On floe, C. Flora.		Shot by Blomkvist with a Martini-Henry rifle. The bear had chased him and another. In good condition, but there was nothing in the stomach or intestines.
" 28.	He-bear.	On the floe.	9 yards.	With one shot with sporting .303 rifle. Soft-nosed bullet. Dark, no moon. At about 8.30 A.M. Bear rushed at Jackson on his approaching him. He was in good condition, but with nothing in the stomach or intestines except a little fluid in the former. <i>Course of bullet:</i> Entered one inch above right eye, fracturing frontal bone; and its course being backwards and downwards, it ploughed up and shattered a large part of right parietal bone, sending also from that point numerous severe fractures into left parietal as well as frontal bones; and breaking up in its course into numerous pieces great and small the right temporal with its petrous bone and the occipital, the condyles of which were almost completely separated from the rest of that bone.

GAME LIST

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DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1894.				The brain, of course, was very severely injured on that side. The bullet was found in pieces in the débris at the base of the skull (back part).
1895. Jan. 9.	He-bear.	Floe at C. Flora.	60 yards (3rd shot).	Killed with three shots from .450 Double Henry Express. First and second shots badly wounded him but did not stop him. The third shot knocked him over. Only some undigested brown paper was found in his stomach. He was in very good condition and fat. It was bright moonlight (close to "Bear Corner"). <i>Course of 3rd shot:</i> Bullet entered left side opposite 3rd rib at its angle (two inches from spine). It fractured the 3rd rib, passed through the apex of the left lung in an inward, forward and upward direction, travelled across the lower (or anterior) surface of 2nd and 1st dorsal vertebrae, pulverising those surfaces, and sending star-shaped fractures through their bodies, causing hæmorrhage in the spinal canal for about six inches. Continuing in the same direction, it fractured the first rib on the right side close to its articulation with the first vertebra (but not separating that with the second vertebra from the rib). It then passed through the muscles of the neck and went out at the back of the right side of the neck. A considerable quantity of blood (about three pints) was found in the cavity of the left chest. Shot by Jackson.
Jan. 18.	He-bear.	On floe, C. Flora, 2 miles from ship.	12 yards.	Killed, after a long chase of two miles over the floe in the darkness, with one shot from Double Express Henry .450 rifle. Temp., 31° F. below zero and a gale blowing. <i>Course of bullet:</i> Bullet entered neck three or four inches behind and in line with right ear. It travelled in a backward and inward direction through the muscles of the neck till, arriving at the posterior portion of the fourth and fifth cervical vertebrae, it fractured that part of them entering the spinal canal, and severing the

DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1895.				spinal cord, continued in the same direction and slightly downwards through the muscles of the left side of base of neck. Severed the left subclavian artery, and passed in front of scapula into left axilla, and stopped close to the ribs at the back of that region. A little manilla rope yarn was found in the stomach; otherwise it and the intestines were empty. Shot by Jackson.
Jan. 20.	He-bear.	On floe, C. Flora.	20 yards.	By Armitage. Shot with three shots from the Government .303 rifle. Temp., 30° F. below zero. A very large bear, being 7 ft. 9 in. along the back. <i>Course of fatal bullet:</i> Entered neck somewhat in front and above left shoulder. Proceeded in a backward direction until arriving at upper border of left scapula, the bullet passed through about an inch and a half from upper edge. This separated the whole of the upper part from the rest of the bone, the line of fracture running into the glenoid cavity of the shoulder-joint, dividing the articular surface into two halves. It then proceeded backwards still, but somewhat inwards, through muscles of back, until arriving at spine. It passed between the spinous processes of fourth and fifth dorsal vertebrae, near which a portion of the nickel of the bullet was found. At this point the bullet changed its course, proceeding forwards and downwards through the muscles on the right side of the back and base of the neck, where, after extensively wounding the large vessels of right side of neck, it also considerably wounded the trachea, causing quantities of blood to descend into the lungs. The remnants of the bullet were found at this point buried in an enormous blood-clot, which filled the connective tissue spaces near by. Of the other two shots fired, one missed him altogether, and the other was only a skin wound, passing out again. Nothing was found in the stomach or intestines.

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DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1895. Feb. 3.	She-bear she-cub.	Cape Gertrude	4 yards.	She was lying up in a hole, being disturbed by the dogs at the air-hole to her lair. Had given birth to a she-cub a day or two previously. Shot with sporting .303 rifle, "Tweedie" bullet. <i>Course of bullet:</i> The bullet entered about two inches below and a little to the front of the right eye, and its course was backwards and inwards. After piercing the skin, it passed through the temporo-maxillary fossa, with the muscles, &c., contained therein. It then passed through the sphenoid bone and brain. It pierced the occipital bone on left side of foramen, thence through the muscles of the neck, and passed out again about four inches behind the left ear. In the course of its passage it left no bone of the cranium intact, for the frontal, both temporals (with petrous portions), parietal, as well as the occipital, being fractured into many small pieces, as though a heavy mass had struck the vault, the skull being practically shattered. The exit wound was only a little larger than the entrance one (see Journal for Feb. 4). Shot by Jackson.
„ II.	He-bear.	Close to hut.	8 yards.	Killed by four shots from Double .450 Henry Express rifle. Nothing in stomach (except two pieces of his own jaw-bone) or intestines. <i>1st bullet</i> entered about two inches below the left eye. It fractured considerably left side of lower jaw, driving several small fragments into the throat, two of which were found in the stomach. It passed backwards and inwards through root of tongue, fracturing hyoid bone. It carried away the left half of the epiglottis. It then travelled backwards and downwards into the larynx, and fractured the cricoid cartilage and several rings of cartilage of the trachea, making a jagged wound in it. It then ploughed through the muscles in front of the cervical vertebrae, and a piece of the bullet was found in the muscles opposite

DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1895.				<p>the fifth vertebra. <i>2nd bullet</i> entered the left side of the abdomen, travelled forwards, inwards, and upwards, ploughing its way through the muscles of side of abdomen and thorax until, meeting under surface of scapula, it penetrated it, making a star-shaped fracture, and was found in the blubber under the skin at the top of shoulder-blade—a distance of four feet from the point of entrance. <i>3rd bullet</i> entered over centre of right scapula, passed through it in a downward, forward, and inward direction, fracturing the bone extensively, and entered the thorax between the second and third ribs, wounding the apex of right lung, and passed out of thorax close to the left side of sternum, breaking a splinter off it, and was found embedded in the connective tissue between the muscles at base of neck on left side. <i>4th bullet</i>: Wound of entrance was situated at side of neck, about midway between head and shoulder, nearer upper (or back) part on right side, and travelled in a backward and downward direction. After passing through the muscles of the right side, it struck the spine at the fourth vertebra, fracturing the articular processes of it and the fifth vertebra, as well as the transverse process of the fourth, and passed for two inches up the spinal canal and obliquely across it, which was filled with blood-clot, and disorganised the nervous tissue within these vertebrae. It then passed out between the fifth and sixth vertebrae, breaking the left transverse process of the eighth, and penetrated the muscles on the left side of the neck. The bullet was found in the blubber under the skin, in the front of left shoulder at the base of the neck. Shot by Jackson.</p>
Feb. 14.	He-bear.	On floe, C. Flora.	20 yards.	Killed by Armitage with three shots from the Government .303 rifle. First shot wounded him in the neck; the second missed him. He then ran for a mile,

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DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1895.				and Armitage got up with him, and killed him with a bullet that cut the left carotid artery and the trachea, also the left axillary artery. Nothing was found in its stomach or intestines.
March 6.	He-bear.	On floe, C. Flora.	73 and 100 yards.	Killed by three shots from sporting .303 rifle, with "Tweedie" bullets. <i>1st bullet</i> entered the left flank, fracturing the fifteenth and sixteenth ribs, penetrating into the thoracic cavity, passed through diaphragm into abdominal cavity, above the left kidney. It wounded one of the middle lobes of the upper part of the liver, also the cardiac end of the stomach, and tearing one of the larger blood-vessels. The stomach was full of blood. The bullet then crossed below the spinal column, through the muscles attached to the bodies of the vertebrae, and again re-entered the thoracic cavity through the diaphragm, emerging from it between the fifteenth and sixteenth ribs, and the bullet was found close to the skin in the blubber of the right flank. <i>2nd bullet</i> entered left side, fracturing eleventh and twelfth ribs. Passed inwards and forwards through the back of the lower lobes of both left and right lungs, which were extensively torn, and contained a quantity of extravasated blood (blood also poured from the mouth). It passed out of the thoracic cavity between the seventh and eighth ribs, the larger part of the bullet escaping by exit wound just behind right axilla. A piece of the nickel was found in the blubber close to the exit wound. The <i>3rd bullet</i> entered three inches from the second, and evidently cut the inferior vena cava or some large abdominal vein, as the bleeding was very great. The bullet could not, however, be traced amongst the viscera. A small piece of rag or bunting, semi-digested, was found in the stomach—otherwise the stomach and intestines were quite empty. A fibroid adenoma

DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1895.				(lobulated), about the size of a walnut, was found between the lower lip and the gum, and protruded above the level of the teeth. He was in very good condition indeed. Was 7 ft. from nose to tail both along the belly and along the back. Photographed him. Shot by Jackson.
Mar. 18.	Bear.	Floe to S. of C. Flora (3 miles off).	60 yards.	Chased for three miles over the ice to south of Cape Flora, and finally overtaken and shot when crossing a stream of open water in which the ice was moving west at two miles per hour. Armitage shot him in right shoulder at 100 yards range, and Jackson crept over some open cracks in the ice and got to within sixty yards of him, and killed him with a shot from his .303 rifle, with a "Tweedie" bullet through the throat. The ice drove over him within a minute of his being killed, rendering it impossible to get him. Shot by Armitage and Jackson.
" 20.	She-bear 2 cubs.	Mabel Island.	30 yards.	On the ice-slope of Mabel Island. A small she-bear in very poor condition (evidently just having come out from lying-up), and two cubs about two months old. On coming up with her Jackson found her making vigorous rushes at "Sammie," the dog, and on his approaching within fifty yards of her made a determined charge at him. Jackson stopped her, however, when about thirty yards off with a shot from his .303 and a "Tweedie" bullet in the right side of the lower part of the neck, and after spinning round once or twice, she returned to her cubs. He finished her with two more shots and captured her cubs. She had only a little grass in her stomach, and had very little fat on her body. The temperature being - 30° F., and being anxious to get on, the courses of the bullets were not traced.
" 20.	He-bear, She-bear.	Bell Island.	80 to 50 yards.	Shot high up (two-thirds of height) on the talus of the cliffs of Bell Island. Jackson shot the she-bear through the head first at eighty yards, and she rolled head over heels to the foot of the talus, a height of about 700 feet, and the he-bear started

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1895.				<p>after her, when a shot from Jackson made him swing round, and he then made a rush in his direction, when he put a second bullet in his right shoulder, breaking it, and he then began rolling and partly scrambling down the talus. Jackson put another shot into him on his way down, and even when at the bottom he got on to his legs and faced round for some one "to go for," but a fourth shot through the heart finally laid him out. He was a huge, old bear over 8 ft. long. He exhibited great rage at these proceedings, and would have made it very unpleasant for any one he could have got at. He was rather thin. No open water near or within many miles.</p> <p><i>Course of bullet (She-bear):</i> "Tweedie" .303 bullet, entered just to the left of right eye in the line between the eyes. Broke a hole in frontal base and smashed the roof of the head, and left half of the occipital bone churning up the brain matter. The bullet lodged under the skin behind the left ear.</p>
Mar. 28.	He-bear.	Elmwood.	12 yards.	<p>Shot with .303 sporting rifle and "Tweedie" bullets, on the snow-bank behind the hut when stalking our dogs, which were tied to spars close by. He was a moderate-sized young he-bear and very bold. A quantity of grass only was found in his stomach. The liver was studded with miliary tubercles. He was in poor condition. <i>1st bullet</i> entered base of neck on the right side, passed backwards, downwards and inwards through upper or anterior part of right scapula, then entered thorax towards the middle line by fracturing fifth rib close to spine. Ripped up muscles on under part of bodies of vertebrae, and caused jagged wound of the descending aorta about six inches from heart. Pieces of bullet were found embedded in the left lung and in the blood-clot lying in the thoracic cavity. <i>and bullet</i> was fired by Armitage from Government .303 rifle and "Tweedie" bullet, and shattered</p>

DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1895.				the humerus of left arm, and pieces of bullet were found in the axilla amongst the blood-clot there. It did not penetrate farther. 3rd bullet entered the left side, penetrating twelfth rib considerably. Passed inwards, forwards and upwards through lower lobe of left lung, then through posterior mediastinum and into upper lobe of right lung, causing considerable jagged wounds of their substance, and pieces of bullet were found in both lungs. He managed to struggle six or eight yards after the first shot, but as the extent of his injuries were not known, two more shots were fired. Shot by Jackson.
April 4.	4 dove-kies.	Water off C. Flora near ship.		All the birds had a large number of a small species of shrimp in their crops.
" 5.	36 dove-kies, 3 rotches, 1 loom.	In lane of water near ship.		Ditto. Ditto.
" 6.	32 rotches, 12 dove-kies.	Do.		Ditto. Ditto.
" 7.	8 rotches, 3 dove-kies.	Do.		Ditto. Ditto.
" 11.	50 looms, 12 dove-kies, 3 rotches.	Do.		Ditto. Ditto. One rotche had the remains of its winter coat in a white line of feathers around the neck. (Kept the skin for specimen.)
" 13.	37 looms.	Do.		Shot at Cape Flora during absence sledging by the doctor and others.
" 16.	He-bear.	C. Flora.		Ditto. Ditto.
" 17.	He-bear.	At camp in De Bruyne Sound.	35 yards.	Approached our camp under the wind at 6.15 A.M. Jackson shot him through the forehead with a solid Government .303. The bullet passed through the head and the upper part of the neck, and out again nine inches behind the head. He had followed up our tracks.
" 21.	He-bear.	Near Sharpe's Rock, C. Flora.		Shot at Cape Flora during absence sledging by the doctor and others.

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DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1895. April 21.	She-bear, He-cub (captured).	On talus, C. Flora.		Ditto. Ditto.
„ 30.	He-bear.	Lat. 81° 4' 38" N.; long. 53° 46' 37" E.	30 yards.	He came down our tracks at a trot, and made for us without the least hesitation, until a shot from Jackson with his .303 rifle hit him in the lower part of the neck, and he slewed round, and he put a second bullet in behind the right shoulder, penetrating the right lung and the base of the heart. After this he ran twenty yards. He showed the utmost fearlessness and absence of caution, and would have made it very unpleasant had he been missed.
May 2.	She-bear, He-cub (2 years old).	At camp, Lat. 81° 20' N.; long. 55° 54' 52" E.	70 yards.	They both came down towards the camp and approached without any fear or hesitation. Two shots from .303 killed the mother, and the cub made off, but returned after two hours to the body, when Jackson put a bullet ("Tweedie") through the right side of the head under the ear, which passed through and out on the left side under the left ear, and the nickel of the bullet lodged in the flesh of the left foreleg.
„ 5.	He-bear.	At ship, C. Flora.		Shot at Cape Flora during absence sledging by Dr. Koettlitz and others.
„ 14.	24 looms.	Talus, C. Flora.		<i>Contents of crops:</i> Shrimps.
„ 17.	12 looms.	Do.		Ditto. Ditto.
„ 17.	1 snow bunting.	C. Flora.		<i>Contents of crop:</i> Quartz, basalt, poppy-seeds, scurvy-grass, saxifrage-seeds, and moss.
„ 19.	82 looms.	Talus, C. Flora.		Large flocks of looms were returning from seawards, flying much lower than usual across the foot of the talus. The threatening weather evidently drove them in for shelter. They had nothing at all in their crops, so doubtless they had flown a long way and had not stopped to feed on the way.
„ 20.	3 buntings.			<i>Contents of stomachs:</i> Quartz, leaves of grass, moss, oats without husks, hairs of oats, basalt, seed of saxifraga, and seed of papaver nudicaule. Jackson skinned these for specimens.

DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1895 May 25.	26 looms.	Talus, C. Flora.		
" 27.	22 looms, 2 rotches.	Do. (by Sharpe's Rock).		
" 28.	Hesaddle- back seal.	300 yards from shore of Hooker Island.		It was killed 300 yards from the shore of Hooker Island, near the old depôt. Had a hole through the ice communicating with a tide crack. Nearest known open water or polynia off Cape Barents (twenty miles distant). Nothing in the stomach but a few thread-worms, and only three-quarters of an inch of blubber at most under the skin. The seal's hole had a ledge of ice eighteen inches within the porch-like entrance to it.
" 29.	He-bear.	At hut.		By Armitage. Was "going for" the dogs, and when shot had approached within a foot or two of "Rawing" with his mouth open. Had the remains of a seal in his stomach. He was killed within ten yards of the hut on the top of the snow-bank.
" 29.	52 looms.	On talus, C. Flora.		
" 31.	He-bear.	Snow- slope of cliff near hut.	30 yards.	Killed with one shot from sporting .303 rifle ("Tweedie" bullet). <i>Course of bullet:</i> Entered slightly to the right of middle line of neck in front of the windpipe. Passed upwards, backwards, and slightly outwards through the windpipe and gullet, which were extensively lacerated. Passed through the transverse processes of the third and fourth cervical vertebrae, which were shattered, but leaving the cord untouched, but causing much hæmorrhage into the canal. It then passed backwards through muscles of the neck, and then through the muscles of the back between the scapula and the ribs, and the bullet was found in the muscles opposite the seventh rib about three inches from the vertebral column. He was in a very thin condition, with no blubber under the skin or fat in the abdomen. Nothing was found in the stomach. Shot by Jackson.

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DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1895. June 4.	She-bear.	Snow-slope of cliff near hut.	35 yards.	Disabled by a shot from .303 (solid Government bullet). It entered back on left side about three inches from spine. Passed inwards and downwards through the muscles, fracturing seventh rib and wounding pleura of same side. Passed through spine, fracturing the transverse and spinous processes with arch of spinal canal of seventh and eighth dorsal vertebrae, then through muscles of right side, and part of bullet passed out through the skin two inches from spine, and part was found in the blubber near the skin. Fragments were also found among the broken bones of the spine and the muscles of the right side. Nothing was found in the stomach. Shot by Jackson.
" 4.	13 looms.	C. Flora.		
" 1.	Glaucous gull, ivory gull.	Do.		Specimens. <i>Contents of stomach:</i> Fish-bones, flesh and feathers.
" 8.	Glaucous gull.	Do.		Ditto. Ditto.
" 8.	1 purple sandpiper			<i>Contents of stomach:</i> Quartz, basalt, leaves of saxifraga oppositifolia and larvae. Six parts larvae, four pebbles about $\frac{1}{4}$ in. in red brown. Digested leaf of a moss. Quartz, eight parts; basalt, one part; digested and vegetable matter, one part.
" 9.	1 purple sandpiper 1 "molly-moke."	Do.		Ditto. Shot by Jackson.
" 10.	2 Brent geese.	C. Flora.		
" 10.	She-bear.	C. Flora.	35 to 45 yards.	Three solid Government .303 bullets from sporting rifle. A loom and partly-digested seal was found in the stomach. <i>and bullet</i> entered left side of head, three inches behind eye. Passed inwards, forwards, and slightly upwards, entering skull at the junction of squamous portion of the temporal bone and greater wing of sphenoid and frontal bone, a plate of which, two and a half inches across, was knocked off. It completely severed the forehead above the

DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1895.				
June 10.	1 kitti-wake.			eyes, and the nickel of the bullet was stopped and embedded inside the ridge on outer and back side of right eye, from which several fractures extended. Shot by Jackson. <i>Contents of stomach:</i> Feathers (very small), probably its own; digested vegetable matter—a small quantity. (Specimen.)
" 7.	11 looms, 2 kitti-wakes.			
" 11.	41 looms, 2 skuas (Richardson's).			<i>Contents of stomachs:</i> Feathers and fish-bones. (Specimens.)
" 12.	26 looms.			
" 19.	16 looms.			
" 20.	13 looms.			
" 20.	He-bear.	Floe, C. Flora.	80 yards.	Killed after three shots from sporting .303 rifle. Shot by Jackson. <i>Contents of stomachs:</i> Shrimps only. (Specimens.) Shot by Jackson.
" 20.	4 terns.			
" 24.	2 eider ducks.	Cape Gertrude.		<i>Contents of stomachs:</i> Shrimps, shells (pieces), basalt. (Specimens.) Shot by Jackson and Armitage.
" 25.	32 looms.	C. Flora (talus).		
" 27.	He-bear.	By flag-staff, C. Flora.	30 yards.	Killed by one shot from my sporting .303 rifle (soft-nosed bullet). <i>Course of bullet:</i> Entered an inch to left of median line under neck, opposite cricoid and thyroid cartilages. Took a forward, inward and upward direction, wounding the external jugular vein, fracturing the thyroid cartilage extensively, and passed through it. It then passed through the cellular tissues and muscles, until it impinged upon the petrous portion of the right temporal bone, which it severely fractured, and passed through it into the brain (the whole of the nickel portion of the bullet was found in the petrous bone), sending fractures upwards into the squamous portion of the right parietal, as well as forwards into the superior maxillary bones. I carefully weighed the bear in parts. He was a fair-sized he-bear,

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DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1895.				and weighed 808 lbs., of which the skin and blubber and paws taken off at the wrist weighed 242 lbs; shoulders, 58 lbs. and 55 lbs.; liver, 16½ lbs.; kidneys, 4½ lbs.; lungs and heart, 17 lbs. He had a semi-digested seal in his stomach. Shot by Jackson.
July 7.	10 looms.	Talus, C. Flora.		
" 7.	2 glaucous gulls.			
" 14.	She-bear.	C. Grant.	40 yards.	Killed with three shots from sporting .303 and a shot from Government rifle. Killed by Armitage and Jackson.
" 16.	♂ and ♀ skua (Richardson's).	Do.	30 to 120 yards.	
" 19.	♂ ivory gull.	Do.		Shot by Jackson for specimens.
" 23.	♂ glaucous gull.	Top of C. Neale (700 ft.).		
" 23.	1 rotche.	Do.		
" 15.	He-bear.	C. Grant.		Got on to a low berg and died there, but was not recovered owing to a strong wind driving the ice on which he lay out to sea. Shot by Jackson.
" 19.	Ivory gull.	C. Grant.		Specimen.
" 23.	2 skuas.	Cape Crowther.		Specimens.
" 24.	5 dovekies.	Top of C. Neale (700 ft.).		Specimens.
" 25.	♂ and ♀ dovekies.	Do.		Do.
" 25.	♀ tringa (purple sand-piper).	C. Neale.		Do.
" 25.	Glaucous gull.	Top of C. Neale (700 ft.).		Do.
Aug. 4.	4 young looms.	C. Grant.		
" 10.	2 red-throated divers.	Bell Island.		Fish found in the stomach.
" 8.	2 young looms.	Cape Stephen.		Specimens.

Shot by Jackson.

DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1895. Aug. 10.	Arctic tern.	Bell Island.	35 yards.	Specimens.
" 10.	Red-throated diver.	Mabel Island.		Do.
" 10.	Young red-throated diver.	Do.		Do.
" 11.	Young dovekie.	C. Flora.		Shrimps found in the stomach.
" 13.	27 looms.	Do.		Killed by three shots from sporting .303 rifle (two "Tweedie's," one nickel-covered regulation bullet). First shot entered right side of neck, passed backwards, smashing the right shoulder into twenty pieces. It was found among the broken pieces of bone. The nickel-covered bullet passed through left buttock, through the intestines, cutting them in many places, through right lung, and lodged behind the right shoulder, having smashed the seventh rib in its passage. The bullet remained quite undamaged. Shot by Jackson.
" 15.	142 looms.	Do.		
" 15.	She-bear.	Edge of floe, C. Flora.		
" 16.	146 looms.	Do.		
" 17.	134 looms.	Do.		
" 17.	He-bear (small).	Do.		
" 18.	142 looms.	Do.		
" 19.	94 looms.	Do.		
" 20.	4 walruses (1 young bull, 2 young cows, 1 calf).	(on a piece of ice).		
" 21.	113 looms.	C. Flora.		
" 21.	1 cow walrus.	Do.		Shot on the ice, by Armitage and Jackson, but the ice being in motion nearly crushed the boat, and we had to haul her out to avoid it: we were unable to reach the walrus, which drifted away east on the ice.

Shot by Jackson.

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DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1895. Aug. 22.	88 looms.	C. Flora.		(1123 looms from August 13 to August 26 for the winter larder shot by Jackson.) Only a very few roches are left. A large number of looms have also left. Nearly all the looms have now gone. Only about a hundred are now left on the rocks. None are to be seen on the sea. There are plenty of kittiwakes both young and old on their nests still. None have yet left.
" 23.	69 looms.	Do.		
" 25.	49 looms.	Do.		
" 26.	7 looms, 1 dovekie.	Do.		
" 28.	(1) 1 glaucous (young), 1 skua (Richardson's).	Do.		Specimens. (1) It had nearly the adult plumage, but with a few brown patches on the neck.
Sept. 1.	2 Brent geese, 1 skua (Richardson's).	Do.		Specimens.
" 7.	2 cow walruses, 1 young bull, 1 cub.	Do.	(In the water.)	The two cows and the young bull, were secured but the cub sank when shot. Killed with solid bullets from .303 rifle. <i>Contents of stomachs:</i> Quartz, and basalt, pebbles, bivalves, and broken-up shells. Shot by Armitage and Jackson.
" 7.	1 young glaucous gull.	Do.		Specimen by Jackson.
12.	1 cow walrus.	Do. (on a piece of ice).	40 yards.	Killed with one solid bullet from .303 through back of head. We could only take the head, as the ice was coming down upon us. The bullet perforated the atlas (right lamina) and spinal marrow, and out through the ligament on the other side, without splintering the bone. Shot by Jackson.
" 18.	2 young ivory gulls, 1 adult ivory gull, 1 young "molly- moke" (Fulmar Petrel). 1 snow bunting.	C. Flora.		Specimens. In the stomachs of the ivory gulls were found some shrimps and a bivalve-shell. By Jackson.

Shot by Jackson.

DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1895. Sept. 23.	9 young ivory gulls.	C. Flora.		Specimens. Laminaria, fish and broken-up shells found in the stomachs of the ivory gulls. A tapeworm was found in the intestines of one ivory gull. Shot by Jackson.
" 23.	1 young glaucous gull, 1 snow bunting.	Do.		
" 25.	3 young ivory gulls.	Do.		
" 27.	1 young kittiwake.	Do.		Specimen.
Oct. 13.	1 adult ivory gull.	Do.		Do. } Shot by Jackson.
" 14.	1 adult ivory gull.	Do.		Do. }
Dec. 1.	4 bull walruses.	On floe, C. Flora.	8 yards.	Two young bulls three-quarter grown and two adults. Shot by Armitage, Dr. Koettlitz, and Jackson. They were lying eight yards from the edge of their hole separated by low hummocks. The largest walrus measured—Length, 12 ft. 6 in. (nose to tip of back flippers); girth (round chest), 10 ft. 6 in.; length of tusks outside the gums, 17½ in. Two of them weighed about two tons each. All were in very good condition.
" 6.	She-bear.	Do.		Shot by Armitage and Blomkvist. She was pregnant with two small fetuses in the bifurcated uterus. (The uterus and fetuses have been kept as specimens in spirit.) The remains of a seal were found in the stomach. No thymus gland could be discovered. There was nothing to lead one to suppose she had been hibernating or intended doing so. The fetuses measured 4½ in. long, and the head, nose, eyes, claws and tail were clearly distinguishable. There must be two breeding seasons for bears—(1) cohabitation in March—(Jackson shot a male and female together at Bell Island on March 20, 1895)—and birth in the beginning of February following; (2) cohabitation in the end of October or beginning of November, and birth in the following August; or else a bear must carry a cub about fifteen months.

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DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1895. Dec. 7.	He-bear.	On floe.	10 yards.	Killed with two shots from .450 Henry Express. First shot through the neck behind the ear, which knocked him over, but he floundered about. Second, behind the right shoulder through the lungs. Nothing in the stomach but a quantity of blood. Blomkvist fired one shot into his left shoulder. The skin of the body from tip of nose to tip of tail measured 9 ft. 2 in.; the brain weighed 18½ ozs.; fairly convoluted, quite as much so as a horse's. (The human brain weighs on an average 48 ozs. to 50 ozs. (male); the female 44 ozs.) Shot by Blomkvist and Jackson.
1896. Jan. 15.	1 She-bear, 2 cubs (half-grown).	On floe, C. Flora, 300 yards south.	12 yards.	<i>Measurements on body—She-bear</i> (she was suckling still): Length along belly, 6 ft. 4 in.; length along back, 6 ft. 6½ in.; chest, 4 ft. 8½ in.; weight of brain, 17 ozs. <i>Contents of stomach:</i> Remains of semi-digested seal (all bears); two pieces of paper (she-bear only). <i>Cub 1:</i> Length along belly, 5 ft. 2 in.; length along back, 5 ft. 0½ in.; chest, 3 ft. 9 in. <i>Cub 2:</i> Length along belly, 5 ft.; length along back, 5 ft. 3½ in.; chest, 3 ft. 11 in.; weight of brain, 16½ ozs.; weight, 234 lbs. Shot by Armitage and Jackson. Armitage killed cub No. 1, Jackson the she-bear and cub No. 2. The she-bear was not pregnant. All in fair condition.
„ 17.	He-bear (very large).	Elmwood, C. Flora (behind stable).	8 yards.	Killed by Jackson with one shot from Double .450 Express rifle through the head. <i>Measurements on body:</i> Length along belly, 7 ft. 11½ in.; length along back, 8 ft. 2 in.; girth of chest, 6 ft. 5½ in.; girth of belly, 6 ft. 7½ in. <i>Contents of stomach:</i> Digested seal. Was fairly fat. Weight of brain, 15 ozs. <i>Measurements of skin off body:</i> Length, 8 ft. 11½ in.; breadth, 6 ft. 10 in.
Feb. 1.	He-bear (small).	C. Flora (300 yards from flagstaff).	5 yards.	Found on May 25 on the snow thawing at the foot of the steep slope below No. 1 Berthon. Through this bear "Räwing"

DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1896.				
Feb. 28.	He-bear.	On floe.	25 to 45 yards.	came to his end. Weight of brain, 14½ ozs. Killed by Jackson. Killed by Jackson (two shots), .303 rifle. <i>Measurements on body:</i> Length along back, 6 ft. 11½ in.; length along belly, 7 ft. 2 in.; across head between ears, 1 ft. 2 in. Old he-bear. Small for a full-grown male. Nothing at all in the stomach. He was in fairly good condition. He had an old bullet wound in the middle line just behind the ears, nearly healed. The bullet had evidently travelled from before backwards almost horizontally. Weight of brain, 16 ozs.
March 2.	He-bear (three-quarter grown).	On floe, C. Flora (below flagstaff).	35 to 45 yards.	Killed by Armitage and Jackson. The latter knocked him over with a shot in the neck, which penetrated chest, but after lying on the ice for about twenty seconds, he got up and staggered off. They each then gave him two more shots. He was a three-quarter grown he-bear: was in poor condition, but his stomach was full of semi-digested seal. The brain weighed 14½ ozs.
" 5.	He-bear (three-quarter grown).	On pond, Elmwood.	45 to 85 yards.	Killed by Armitage and Jackson. The latter knocked him over with a shot (.303) in the neck, but he struggled to his legs again, and three more shots were fired, as he died hard. They found on examining him afterwards both shoulders broken, the lungs perforated in several places, the heart pierced through the ventricles, a shot up the anus, and several bullet wounds in the hind quarters and ribs. He was in rather poor condition, and had nothing in the stomach but a little very dark bile, and the gall-bladder also was full of similar bile. He was very bold and gave chase to a man who first saw him. He marched boldly towards the house, in spite of all the dogs barking at him.
" 5.	He-bear (full-grown).	On floe below flagstaff.	60 to 100 yards.	Shot by Armitage, Dr. Koettlitz, and Jackson. Jackson photographed him first with a hand camera, before killing him. He was in fair condition, but his stomach was empty.

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DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1896.				
Mar. 20.	He-bear (large).	C. Flora.		Shot by Dr. Koettlitz.
" 21.	He-bear (medium).	Do.		Shot by Dr. Koettlitz and Heyward.
" 31.	He-bear (medium).	Do.		Shot by Heyward and Dr. Koettlitz. Brain weight, 17½ ozs.
" 31.	He-bear (medium).	Markham Sound.	15 yards and 120 yards.	Killed by two shots from .303 rifle. The first shot placed in his neck. Armitage then shot him in the shoulder after missing with his first; second shot broke his back between the shoulders as he was going off at a fast rate. He came up to the camp with remarkable boldness, and tried to go for some dogs tied to an ice-axe after my first shot. I took a camera snapshot, 7½ sec. 8 stop, but the light was too bad (snowing, misty, and 9 P.M.). Weight of brain, 16½ ozs. Shot by Jackson and Armitage.
April 4.	He-bear.	C. Flora.		Shot by Dr. Koettlitz. Brain weight, 18½ ozs.
" 22.	1 young ivory gull.	Elmwood, C. Flora.		Had the same black markings on the head and wings as the young gulls killed last autumn. It was in company with two other gulls which were quite white. Shot by Jackson. (Specimen.)
" 27.	He-bear (medium).	Do. (12.45 A.M.)	12 to 60 yards.	An old he-bear of medium size (7 ft. 4 in. from tip of tail to tip of nose along belly). Jackson took twelve negatives with hand camera, the three last at a distance of from 10 to 15 yards, before shooting him. He then put a bullet through the lungs, but he made off. Armitage then broke his near hind leg and Jackson his near shoulder, the same bullet also breaking his backbone. Discoloured broken teeth, empty stomach, poor condition. Shot by Armitage and Jackson.
" 27.	10 looms, 1 dovekie.	Talus, C. Flora.		Looms are now coming on to the rocks in greater numbers. Rotges and dovekies have been there for some time before the looms appeared. Kittiwakes are now upon the lower cliffs. By Jackson.
" 28.	1 young ivory gull.	Do.		Black markings on wings and head. (Specimen.)

DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1896. April 29.	8 looms.	Talus, C. Flora.	70 yards.	Photographed at forty yards with dogs playing him as he made off (8 stop, 1 $\frac{1}{2}$ sec., overcast, 6.30 P.M.). As he was going off Jackson shot him through the flank, cutting his bowels in several places and smashing the right kidney. He staggered off seventy or eighty yards farther, and then Jackson finished him. He was in poor condition, but an apparently young seal was in his stomach. He faced the dogs boldly for some time. Weight of brain, 16 $\frac{1}{2}$ ozs. Shot by Jackson.
" 29.	He-bear (young, small).	On floe, C. Flora.		
May 12.	He-bear (medium).	On floe, C. Flora (near Bear Berg).	110 yards.	Shot by Blomkvist and Jackson. Stomach had some horse-dung and a little waterproof linen in it from some packing-cases. Weight of brain, 16 ozs.
" 13.	10 looms, 1 dovekie, 11 rotches.	Talus, C. Flora.		Shot by Jackson.
" 16.	12 looms, 12 rotches.	East talus, C. Flora.		
" 23.	2 looms, 4 rotches, 1 dovekie.	Do.		
" 24.	11 looms, 3 rotches.	Do.		
" 27.	1 turn- stone (cock- bird).	Elmwood, C. Flora.		
" 28.	1 eider- duck (drake).	West Point, C. Flora.		
" 28.	1 purple sandpiper.			
" 31.	10 looms.	East talus, C. Flora.		
June 2.	8 looms, 2 dovekies.	S. talus, C. Flora.		
" 3.	2 rotches.	Summit of C. Flora.		
" 5.	11 looms.	S. talus, C. Flora.	110 yards.	Killed with one shot from .303 rifle ("Tweedie" bullet). Bullet
" 6.	He-bear (medium).	On floe, C. Flora.		

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DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1896.				passed through right axilla, cutting a part of the brachial plexus, passed through the apex of both lungs, cutting the descending vena cava, and filling the thorax with blood. It then passed through the ribs on the left side, and lodged in the left shoulder. A quantity of grass only was in the stomach, and he was very thin. Photographed before shooting, after mortally wounded, and after death, with hand camera. Shot by Jackson.
June 7.	36 rotches.	Gully rocks.		
" 10.	2 Lapland buntings. ♂	C. Flora (behind Eira Cottage).		
" 11.	1 Lapland bunting. ♀	C. Flora (by Sharpe's Rock).		<i>Contents of stomach:</i> Pieces of shell, moss, small grubs, basalt, sand. All three were cocks. Shot by Jackson.
" 11.	2 Brent geese.	West Point, C. Flora.		Shot by Armitage.
" 12.	2 Brent geese.	Do.		Shot by Jackson.
" 12.	5 looms.	S. talus, C. Flora.		
" 14.	6 looms.	Do.		
" 16.	7 looms.	Do.		
" 17.	8 looms.	Do.		
" 18.	7 looms.	Do.		
" 20.	10 looms.	Do.		
" 22.	10 looms.	Do.		
" 24.	5 looms.	Do.		
" 24.	She-bear.	By flag-staff, C. Flora.	40 yards.	Shot by Nansen. Jackson took a number of negatives of her before being fired at and after being wounded. She had thin milk in her teats, but was not pregnant. The hair on belly very thin. Probably had just got rid of a cub. Loom skins in stomach picked up at the hut.
" 28.	17 looms.	S. talus.		
" 30.	7 looms.	Do.		
" 30.	1 snowy owl.	On hummock of ice near Eira Cottage.		Shot by Armitage with a rifle. <i>Contents of stomach:</i> Remains of a loom. When first seen was endeavouring to capture a tern. Was very wild. (Specimen.)

DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1896. July 2.	19 looms.	S. talus, C. Flora.		
" 3.	7 looms.	Do.		
" 5.	11 looms.	Do.		
" 5.	She-bear.	On floe.		Shot by Nansen, Jackson, and Armitage. Jackson and Nansen took a number of negatives of her as she stood at bay on the top of a berg.
" 6.	3 looms.			
" 8.	20 looms.	C. Flora.		
" 11.	15 looms.	Do.		
" 13.	19 looms.	Do.		
" 16.	16 looms.	Do.		
" 19.	13 looms.	Do.		
" 22.	7 looms.	Do.		
" 23.	7 looms.	Do.		
" 25.	8 looms.	Do.		
" 28.	12 looms.	Do.		
" 31.	8 looms.	Do.		
Aug. 3.	9 looms.	Do.		
" 5.	8 looms.	Do.		
" 6.	7 looms.	Do.		
<i>For winter.</i> Aug. 8.	81 looms, 2 kitti- wakes, 2 glaucous gulls.	Do.		Specimens. Do.
" 9.	128 looms.	Do.		
" 10.	119 looms.	Do.		
" 11.	113 looms.	Do.		
" 13.	140 looms.	Do.		
" 14.	128 looms.	Do.		
" 16.	139 looms.	Do.		
" 19.	127 looms.	Do.		
" 20.	She-bear.	Talus, C. Flora.	80 to 200 yards.	Shot by Jackson. Length: 6 ft. 1 in. from nose to root of tail. <i>Contents of stomach:</i> Grass and a little blubber. She was very fat. Weight of brain, 16 ozs.
" 24.	163 looms, 46 looms (young), 80 looms (20 young).	C. Flora.		
" 26.	He-bear (medium).	C. Flora (Elm- wood).	5 yards.	Jackson photographed him at eight yards distance, and again when only three and a half yards off. He then had to hurriedly use his .303 rifle, and shot him on the right side of the head just in front and below ear. This

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DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1896.				knocked him over, but he half struggled on to his legs, and Armitage, who had come up, put a bullet through his abdomen, and Jackson again shot him through the neck, which finished him entirely. Measured 6 ft. 9½ in. from nose to root of tail (back).
Aug. 26.	She-walrus.	On ice, C. Flora.	30 yards.	
" 26.	Snowy owl.	C. Flora.		Was sick. Caught by Wilton.
" 27.	He-bear (large).	Do.	30 to 40 yards.	Shot by Armitage, the doctor, Wilton and Jackson. Jackson first of all took a number of negatives of him with the half-plate camera and hand camera. He had been feeding on the blubber of the walrus shot yesterday, and his stomach was enormously distended; the contents weighed between 60 and 65 lbs., and oil ran out of his mouth. Measured 7 ft. 7½ in. from nose to root of tail. Weight of brain, 19 ozs.
Sept. 2.	She-bear.	C. Flora (on floe).	70 yards.	Measured 6 ft. 3 in. from tip of nose to root of tail. Shot by Armitage and Jackson. The latter photographed her seventeen times before shooting her.
" 15.	Ringed seal (male).	C. Flora.	25 yards.	Shot by F. G. Jackson in the water near the flagstaff. <i>Contents of stomach:</i> Fish, broken shells.
Oct. 20.	1 dovekie (adult), 10 dovekies (young).	Do.		By F. G. Jackson. All in winter dress. The brown on the feet and legs of the young ones had almost been replaced entirely by the adult red, and the white wing mark was mottled with black. The under parts white, but the back and back of neck white speckled with black.
" 22.	3 young dovekies.	Do.		
Dec. 6.	He-bear (full-grown).	Flagstaff, C. Flora.		Shot by the doctor and Armitage. Stomach empty, but in good condition. Weight of brain, 10 ozs.
1897. Jan. 16.	He-bear (very large).	Near coal-bags, Elmwood.		Shot by Armitage, Dr. Koettlitz, and Wilton. Measured 7 ft. 5 in. from tip of nose to root of tail along the back: to tip of tail, 7 ft. 11 in. Stomach contained loom skins (picked up at the hut) and grass.

DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1897. Feb. 14.	He-bear (medium).	Elmwood.	15 yards.	Shot by F. G. Jackson near the stable. <i>Contents of stomach:</i> Gastric juice and small lumps of basalt.
" 20.	He-bear (small).	Do.	35 yards.	Shot by F. G. Jackson between the observatory and pond. <i>Contents of stomach:</i> A small piece of canvas. He was in very thin condition.
April 22.	She-bear.	Cape Ludlow.	25 yards.	Shot by F. G. Jackson at camp. Had followed the sledge tracks up on to the glacier behind C. Ludlow.
" 27.	She-bear and two cubs.	Cambridge Bay.	20 yards.	Rushed down upon our sledges as we were passing through some very rough ice. Shot by F. G. Jackson (one shot through the head).
May 17.	She-bear.	On floe, C. Flora.	35 yards.	Stood at bay upon the top of a small berg, where she was being teased by the dogs. Shot by F. G. Jackson (one shot through head). A quantity of grass only in stomach.
June 8.	9 looms.	Talus, C. Flora.		
" 9.	Lapland bunting.	C. Flora.		By F. G. Jackson. (Specimen.)
" 9.	Shore- Lark ♂.			By Armitage.
" 10.	1 Brent goose.	Do.		
" 17.	10 rotges.	Gully Rocks.		
" 20.	He-bear.	At the hut.	20 yards and 90 yards.	Shot by F. G. Jackson (5.15 A.M.). One shot through jaw and throat; second shot through the shoulder; third shot through neck, breaking spine. His stomach was full of grass. Photographed. Specimens.
" 24.	2 Arctic terns.			
" 27.	17 looms, 2 dovebies.	Talus, C. Flora.		Do.
" 28.	1 Purple sand- piper. 1 Bona- parte's sand- piper.	C. Flora.		
July 1.	He-walrus (young).	Do.		
" 11.	3 cow walruses.	Off C. Flora.		By Wilton.

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DATE.	GAME.	LOCALITY.	DISTANCE.	REMARKS.
1897. July 11.	2 bull walruses.	Off C. Flora.		
" 13.	3 cow walruses.	Do.		(One cow landed, two sank.)
" 13.	1 young bull-calf.	Do.		Weight, 187 lbs. Navel string still unhealed. Measured 4 ft. 4 in. in length; 3 ft. 8 in. in girth. Captured alive.
" 14.	1 young bull walrus.			
" 29.	19 looms. 1 cub walrus.	Do.		Captured alive.
Aug. 7.	8 ivory gulls (young). 10 ivory gulls (young).			Taken alive. Specimens.
" 11.	11 Poma- torhine skuas. 1 Arctic tern.			Shot by Jackson. 77° 30' N. Lat. 35° 15' E. Long.

CHAPTER XIX

PREPARING FOR OUR SECOND WINTER

August 13th, 1895, Tuesday.—I have been thinking of yesterday's sport at home, and wondering if they got good bags on the moors. The sea is now very full of ice, and we have just got back in the nick of time. As far as we can see to the southward and eastward the sea is packed with ice, much of it being large floes. Whether the ice comes out of the fjords to the north-east or from the Kara Sea we have no chance of judging—probably from both. I started to day to shoot looms for the winter and present uses.

Some of the dogs broke loose last night. Had their usual "mill" and killed "Sammy" and "Laughing." The former was a good bear dog. I feel very sorry about it, poor old chap. He has given us many a good hunt, and was very keen.

Fisher is arranging and drying his botanical specimens, the doctor is skinning the remainder of the bird specimens we brought back from our late boating expedition.

In the afternoon Fisher and I went up to the talus to get looms for the winter. I killed one hundred and twelve to-day.

August 15th, Thursday.—I went up the talus, accompanied by Heyward as retriever to shoot more looms. By three o'clock I had killed one hundred and forty-two. Fisher and the doctor came out later to help us to carry

LOOMS

them back to the hut. About 6.30 P.M. we espied a bear on a drifting floe about a mile and a half to the S.S.W. I called out the boat's crew and manned the *Mary Harmsworth*, and pulled away to the floe edge. On seeing us she began to stalk the boat and eventually came within thirty yards, circling round, and several times stood up on her hind legs like a rabbit to try and get a better view of us. I put a shot from my .303 into her neck, which dropped her. Armitage also shot her through the chest. It was a medium sized she-bear, which the doctor tells me was not in cub. We towed her back behind us to the shore, took the skin off, and cut up the meat during the evening. The sea in every direction is now full of ice and very little water is to be seen. A remarkable change. It keeps on coming in from the eastwards. The looms are now getting their young ones down to the sea. The youngsters jump off the cliffs, open their wings and skim, the old ones, and often a third, an interested friend I conclude, fly with it (I have never seen more than one young one go at a time), and sometimes support it by laying hold of its tail with their beaks. Occasionally they fall before reaching the sea and come down heavily, but apparently without damage. We have often given them a helping hand onwards on such occasions.

The weather is to-day sunny and quite warm, but the young ice now forms on the sea as soon as the sun gets low.

We are very busy making preparations for the winter. I intend to try and keep scurvy-grass fresh and green by freezing it, for making salad for winter use. I think the bulk of the ice which now blocks the sea here comes out of the Kara Sea, which possibly does not break up till the end of July to the east of Wilczek Land.

August 16th, Friday.—The doctor and I went up the talus to get looms. I killed one hundred and forty-six to-day. Child has been engaged in taking time for Armitage for a "lunar," Fisher in attending to his botanical specimens, and Armitage in the afternoon in skinning looms for the winter, helped by Blomkvist.

I have obtained for specimens several small fish while shooting looms, which they had in their beaks. One species I think is a young ling, or cod, and the other looks very like a stickleback. No seals or walruses have been seen for some days, none in fact since our return. The sea is now quite as much encumbered with ice as it was this time last year. We only just got back in time. Now nothing is to be seen but ice in any direction, with occasional streams of water. During the night hearing a row, I went out and found "Carlo" and "Räwing" murdering "Growler," and the square of dogs pulled about, each trying to get a bite at the unfortunate animal, which I rescued, getting bitten in three places on my left hand in doing so. "Growler" is badly mauled and I fear won't live. These Samoyad and Ostiak dogs are little better than wolves, and soon there will be none left but the strongest (or luckiest) dog. They have a cowardly way of falling upon a single dog and mauling it to death. We have suffered all our losses, except two, owing to this cause. It seems impossible to stop it.

August 17th, Saturday.—I went up the talus to get looms, and killed one hundred and thirty-four to-day. I was joined by Fisher later in the afternoon to help to collect them and bring them home.

The doctor and Blomkvist are engaged in getting the blubber off the last bear; Child in fitting up the stove in No. 2 hut; Armitage in working out astronomical observations and in skinning looms for the winter.

VIRW IN SUMMER TO THE WESTWARD FROM OUR HUT

His feet have not yet recovered from our three days' outing in the boat during the gale off Cape Lofley, the doctor considers his affection rheumatic. Blomkvist also complains of rheumatism.

While away a bear came ashore from the ice at Flagstaff Point, where Armitage administered a couple of bullets to him. We skinned and cut him up after dinner.

SHOOTING LOOMS

August 18th, Sunday.—Fisher and I constructed a freezing chamber in the floe-berg at the point, for the scurvy grass (*cochleria fenestrata*). After lunch he and I went up the talus to continue my loom-smiting for the larder. I shot one hundred and forty-two under three hours, and as a trial I shot and bagged ninety-two out of a hundred consecutive birds, all flying shots. Out of the odd eight, six managed to reach the sea, into which they fell, two I think I missed. I think I could kill a hundred in succession with a little care in avoiding too long shots.

I had the black pony out in a sledge to bring them in. "Growler" died to-day from his wounds received from "Carlo" and "Räwing" two nights ago. "Carlo" and "Räwing" are deadly enemies, but the occasion of a murder being so attractive, and their tastes in this matter so agreeing, they joined hands to pull the event off. It was a case of fellow-feeling making them wondrous kind. These dogs are an awful nuisance.

A bear was spotted on some floating ice about half a mile from shore about midnight. As all the chaps were asleep I went after it in the canvas boat alone, but failed to get a shot, being cut off by his crossing the ice.

It has been snowing all the evening and looks very wintry, and feels so.

August 19th, Monday.—Sent all the Expedition except Armitage, whose feet are still bad, out collecting scurvy-grass for freezing for the winter. Scurvy-grass, so called owing to the old belief that it was a great preventative of scurvy, probably as scurvy was considered to be caused by want of vegetable food, is a fleshy green plant with a white blossom growing close to the ground, and has rather the character of mustard in appearance and flavour. It makes an excellent salad, or when boiled much resembles spinach. I put the two boats in order for launching at a moment's notice in case of either being required quickly for a bear or walrus, and then went up the talus and joined them.

After lunch the doctor and Blomkvist went on getting the blubber off the bear's skin. The blubber we use for burning in the hut with the little driftwood we can collect. It is very smoky and dirty, but we are running very short of coal and I am using as little as possible. Armitage skinned looms, and I, taking another man with me, went up the talus and shot ninety-four. Blomkvist at six

o'clock brought out the sledge and black pony to bring in the birds.

Heyward is doing the cooking very fairly indeed now.

CLEANING A BEAR-SKIN

August 20th, Tuesday.—The doctor is engaged at the bear-skins. Poor doctor! We all keep so well, he really has nothing to do medically, and even the ponies, dogs, and juvenile bears have now failed him. He is

very good at preparing the skins ; he might have served an apprenticeship he is so expert. He gets plenty of practice here. He can turn his hand to anything, and is most neat and thorough in all he does. Blomkvist is engaged in feeding the ponies and dogs, and in taking the former out to graze ; Fisher in arranging and pressing the botanical specimens.

At 4 P.M. I was on the point of going off to shoot looms when I sighted some walruses on the ice to the southward. I called out the crew and launched the boat, and Armitage and I succeeded in shooting all four (one young bull, two young cows, and a calf), but owing to the ice moving rapidly east, we ran considerable risk of being cut off from the land, and consequently could only secure a portion of the meat. We tried at first to tow the whole four to the shore on the piece of ice upon which they lay, but found it impracticable. They are lumbering brutes to haul about, the four probably weighed about three tons !

August 21st, Wednesday.—Armitage and I have been engaged in fixing a tide gauge near the floe-berg at the point to take tidal observations ; the doctor with the bear-skins, Fisher and Child in clearing out the boxes in the corner by the rock behind the hut. And later on in the day Fisher and Blomkvist fetched in a load of dry moss for firing with "Blackie" and a sledge, which we stacked on a flat rock behind the hut.

I, taking Heyward with me to collect the birds, went up the talus and shot a hundred and thirteen looms. About 4 P.M. I saw two walruses on the ice off Leigh Smith's hut. We manned the boat and I killed one at about seventy-five yards range, but the ice closing in around us quite cut us off from it, and we had to haul the boat out to prevent its being crushed, and to get

MR. HARRY FISHER AT WORK AT THE BOTANY

into open water again had to drag it over the ice. The ice with the walrus upon it drifted away rapidly to the eastward. It is a dangerous quarter here to be out in a boat amongst the ice, as it is constantly moving rapidly either east or west with the spring tides, which run fast, and a boat runs considerable risk of being crushed or of being forced out to sea.

August 25th, Sunday.—Fisher and I went up the talus after looms. These we are hanging round the hut, where they soon become frozen and will remain so for the next nine months. The snow has rendered climbing very difficult. In places at the top it lies four feet deep. I bagged forty-nine looms. The great majority have now left the cliffs and I expect the remainder to depart for the south shortly. The young looms are now coming down very fast. I noticed to-day five old birds helping a young one to the sea by flying with it; on the young one reaching the water in safety all but one flew away. I have on several occasions noticed as many as four birds conducting a youngster down. It is really a very pretty sight, and I always give the convoy exemption from a shot.

August 26th, Monday.—The weather still bad. Has been snowing all night, and off and on most of the day with a thick mist.

I spent the morning nailing painted canvas on the roof of the hut to keep out the wet from sudden thaws.

The doctor is engaged with the walrus heads. The ponies cannot now get at any grass, as it is deeply covered with snow, and were not taken out to graze to-day.

We began our tidal observations to-day, neap-tides being now on. Blomkvist, Armitage, and Child have been engaged in skinning and hanging up looms to a

rope passed round the outside of the roof and made fast at the corners. Our hut is literally festooned with birds, and they make quite as grand a show as a poultry-shop at Christmas. In the afternoon Fisher and I went up the talus to try and get more, but they have nearly all of them departed, and I should not think that more than a hundred are now left on the whole of the cliffs. I only shot seven looms and one dovekie. I have shot one thousand one hundred and twenty-three looms since August 13th, so that we are sure of a good larder for the winter! We still want bears for ourselves and the dogs.

It is with a feeling of sadness and regret that we see the birds wing their flight for the south—to home and sunlight; how we wish we could send a message by them to our dear ones there! The high cliffs that through our brief summer (although the highest temperature experienced has been only eight degrees above freezing point) have been covered with bird life, and their cheering cries have recalled to us pleasant memories of rooks building in the high elm-trees, of green meadows and thickets, and the song of birds. Many a time when seated with my gun on the steep talus of Cape Flora I have been lulled into a day-dream, and in my mind's eye have fancied myself back at the covert side watching the pheasants running about amongst the brambles, or a hare timidly crossing a glade, when suddenly the sound of ice-pressure to seaward, or the fall of a snowslide from the cliffs above, has recalled me to my surroundings of snow and ice, of animal and vegetable life feebly struggling with the forces of the white, death-like king of the north.

Those cliffs are now silent, grim, and white, and their solitude will remain unbroken for many dark,

OUR SETTLEMENT IN AUGUST

dreary months of gale and snowstorm and bitter cold. How we shall welcome the cheering "caw" of the loom that breaks the silence next April! May we all be alive and well to hear it.

August 27th, Tuesday.—Snowing most of the day, and very misty and overcast. Blomkvist engaged in fetching in dried moss for firing with the ponies and sledge. I tried the ponies with dog biscuit. They appear to eat it with relish, in fact, animals seem to adapt themselves to circumstances in the Arctic almost as readily as man. I have only about a quarter of a ton of hay left which I am using sparingly.

The sun sank at midnight at sea level.

August 28th, Wednesday.—Fisher and I went east beyond Sharpe's rock and levered a quantity of drift-wood (all very old pine) out of the soil with crowbars. Of course, there isn't a single living tree or even a shrub in Franz Josef Land, and nothing grows higher than six inches from the ground. I took my gun and shot a skua and a glaucous gull (the latter, a young one of last season, apparently with the same plumage as the adult, with the exception of a few grey feathers about the neck).

The sun showed itself this morning and visibly affected the snow on the south-east side of the talus. As I considered it possible to obtain a little more scurvy-grass for freezing for the winter, after lunch I despatched all hands to search for it, and by scraping away the snow they succeeded in getting a good quantity, which I deposited in our ice-cellar in the floe-berg for our winter use. This ice-cellar is a natural cavern formed in the floe-berg when the blocks of ice composing it were crushed up together. It is about five feet deep by thirty inches wide. We blocked the entrance with empty coal sacks.

Fisher and I continued our work in the enclosure,

and also built up the wall of packing-cases and empty flour and biscuit casks behind the hut to protect it from the wind. We also went on with the work of making a road through the boulders of the raised beach to the floeberg for us to drag the sledges loaded with ice during the winter.

The negatives I took in the hand-camera during our late boat journey are coming out very unsatisfactorily, the camera having done everything possible that it should not do. In many cases the cards between the films have got crumpled in changing and have lodged in front of the lens, and in others the exposed film has failed to move from the front of the camera but has jammed there. None of us can discover any cause for this, except that the mechanism apparently often fails to act properly.*

August 30th, Friday.—The doctor, Fisher, Blomkvist and I were occupied all day in clearing the cases of tinned meats out of No. 4 and No. 2 huts, and in building a wall of nine feet high between the dog-kennel and the hut in the hopes of preventing the constant huge drifts of snow which so bothered us last winter around the hut. It will, at all events, stop the driving snow from the E.N.E. which is apparently the prevailing wind during the autumn and winter. We also made a second wall to prevent snow drifting into No. 2 hut, from the same direction.

Armitage took the tidal and meteorological observations and skinned looms. I developed negatives taken on the boat journey, which are now coming out very well indeed, and no mishaps have occurred among the second lot.

* *September 16th.*—I find that this is due to the spiral spring getting weak. I have stretched it out and it now acts properly.

The sun at 10 P.M. being very close to the horizon gave very striking effects, shining through a break in the heavy cloudy sky, and tinting the ice and sea with a rainbow of colours, and the sky around a deep rosy hue. It also cast a rainbow upon a bank of dense mist upon which its rays fell, colouring like fire the smoke-like mass, giving quite the appearance of a huge conflagration, and lighting up with wonderful colours the irregular ice-floes and the high white glaciers in the distance. Even in the Arctic we get lovely colouring sometimes. No more beautiful rainbow effects can possibly be imagined than the glorious band of colour that spanned an arch over the clouds of mist. This very mist gave it a soft ethereal hue and lent a certain delicate unreality to the scene. It was a fine picture.

August 31st, Saturday.—Rained heavily most of last night much to every one's surprise, as we all thought that rain was over for a long time to come. There is never very much, just a few days in the summer upon which rain falls. The thermometer rose to 35° F. with a north-east wind, which is remarkable. A north-east wind has caused a rise in temperature several times recently. A disagreeable drizzle has fallen all day with a dense mist, the sort of thing one enjoys on a Scotch moor, but here we have no grouse and no heather to make up for it. The rain, as usual, in spite of all our efforts to keep it out poured through the roof again in a dozen places, chiefly into my cabin, drenching my guns, much to my annoyance.

The doctor, Heyward, and I turned out No. 2 hut, removing stores to No. 4 and cleared the place out for use as a bear-skinning place during the winter.

Armitage is employed as yesterday, and Blomkvist in cleaning out the house water-cask and filling it with water.

September 1st, Sunday.—After the drizzle and sleet stopped, the sun came out and gave us a pleasant and warm day, and although the thermometer did not rise above freezing-point in the shade, the sun melted the snow on the talus and made the thaw water streams run again.

Fisher and I started out intending to walk through "Windy Gully" but falling in with a flock of seventeen brent geese, out of which I shot two with a right and left barrel, we were delayed too long in getting one out of the sea (with an end section of the canvas boat) and in waiting about in the hopes of getting a further shot, that we had to put off our walk till another day. I also shot a Richardson's skua, which in company with others was chasing the young kittiwakes.

The others went out and got more scurvy grass for the winter. The ponies were turned out to graze for an hour or two this afternoon as the sun had melted snow sufficiently to show some grass. Tringas and buntings are still here. But the looms, rotches, and apparently the dovebies have left us; although I saw a single rotche to-day—the only one seen for some days past.

How very like one day is to another! More snow—less snow. Some birds—no birds. Frost—a gale. Cold—colder. Mist—dense mist. A bear—a walrus. Dusk—darkness. *Voila tout!*

September 3rd, Tuesday.—The remarkable, mild weather still continues, but without rain to-day, a few showers of snow falling instead. Sent the doctor and Fisher out collecting scurvy-grass during the morning. I did a variety of odd jobs, and was engaged in photographing a sketch made by Fisher, of Capes Ludlow and Lofley, and the cape beyond from the summit of Cape Neale, and also one of Cape Mary Harmsworth from a

rough sketch taken when about six miles off on July 28th in the whale-boat, just before the gale began. After lunch Fisher and I walked away east to look for the geese, but we were unsuccessful.

The ice off here is still very heavy and packed. I am still inclined to think that most of it comes from the Kara Sea, as it is very heavy. Possibly the Kara Sea does not begin to come away till the beginning of August ; we shall get a better idea next summer as to whether this is the usual state of things here at this time. It certainly has been so for two years.

Armitage took ten-minute tidal observations to-day, it being spring tides now.

September 4th, Wednesday.—The doctor and Heyward went west over the glacier, Fisher and I east through "Windy Gully," meeting each other at the Meirs Channel end, the doctor and I carrying guns in the hopes of finding geese. We however were disappointed, and nothing was seen of interest except a young Richardson's skua, which I shot. The north end of "Windy Gully" was nearly clear of last winter's snow, and covered with small and large boulders, and nearly devoid of vegetation. In summer it must be very wet. Some bones (jaw and vertebræ) of the Right whale with one or two plates of whale-bone lie at some distance from high water-mark, one jaw-bone being nine feet above. Franz Josef Land is without doubt steadily rising.

A considerable number of bivalve shells lie near the beach similar in kind to those we have obtained before. We got back to the hut at 3.30 P.M. The wind to day was very cool from the west, and snow fell occasionally.

Armitage took the tidal and astronomical observations at high and low water. Observations were taken every ten minutes.

September 6th, Friday.—This evening about 10.30 I noticed a large white bird seize a young loom on its way down to the sea and fly away with it. It was too dark to clearly distinguish the bird, but it must have been either a glaucous gull or a snowy-owl. Owls' pellets and feathers have been found on all Capes which we have visited, the former with feathers and bones in them. I do not think it could have been the former, as I never knew them take a young loom in the air, and the flight so far as I could see did not look like a gull's. Up to the present we have seen no owls. The geese have apparently gone off to the south, as none have been seen since September 1.

The wind dropping this afternoon allowed the tide to bring the ice back against the land, and there is now very little open water off here again. The ground is very hard frozen, and the pond bore Blomkvist to-day, who weighs over fourteen stone.

The doctor has been engaged at the walrus skins to-day, Armitage at the observations and in skinning looms, Child and Fisher at various odd jobs, and I in shifting cases of tinned goods, and in building the packing-case wall by the dogs' kennel and around No. 2 hut.

September 7th, Saturday.—We took the *Mary Harmsworth* round by Sharpe's Rock for the driftwood that we dug out of the soil a few days ago.

Fetches two good loads of driftwood, unloading it again by "Eira Cottage" and carrying it up the bank to be sledged up to the hut later on.

When returning with the last load four walruses were seen in the water. I shot them all and we succeeded in landing three of them on the beach after a great deal of trouble, as they are a fearful weight. The fourth how-

ever, a cub, sank immediately it was killed. I also shot a young glaucous gull for a specimen. Either it or its mother had just killed a young kittiwake, upon which it was feeding.

This is the anniversary of our reaching Franz Josef Land, and I can't help feeling we have been very fortunate as regards health and spirits—the men have all worked well—yes I think we may congratulate ourselves and one another!

Two or three dogs broke loose while we were away, and killed poor old "Overcoat." So named on account of his very thick coat. They are an unmitigated nuisance. The ordinary English chains I have are quite useless to hold these dogs, and every chain has been broken a dozen times, and they are now repaired with thick iron wire.

September 8th, Sunday.—We all went down and "fledged" the three walruses, and with the aid of the black pony sledged them and one of the hides up to the hut. The other two hides we left for removal tomorrow.

Another remarkable change of weather occurred to-day. The thermometer rose to 37° F. being very much warmer, and a little rain fell about 8 A.M. This is very different to what it was this time last year, and very unusual in this high latitude. North-east and E.N.E. winds certainly, recently, have been warm winds here. This day last year we first landed on Cape Flora, and steamed to Cape Barents about 11.30 P.M.

My little Samoyad bitch "Sally" gave birth to four dog pups this evening.

The scurvy-grass appears to be quite unchanged up to the present, and I am in great hopes that the experiment of keeping a fresh green salad through the winter may

be successful. It will be a great score if it can be done. The weather still continues wonderfully mild, and I had the three ponies turned out to graze again to-day.

September 12th, Thursday.—Fisher and I stacked the flags in the north-east corner of the enclosure by the house, and after lunch collected all the firewood about, and stowed it upon two broken sledges to prevent it becoming frozen to the earth, for we must economise coal. The doctor has been busy all day with the walruses; Armitage has been occupied with the observations and in skinning looms, being helped by Blomkvist. Child has been making some iron mangers out of the empty preserved potato tins, as the ponies are fearful crib-biters, and have gnawed away all woodwork within reach, even pulling the floor of the stable up.

About 4 P.M. I saw three walruses upon a piece of ice some distance off the shore opposite to where our boat is lying. We manned her and pulled out to them, but something scared them and they made for the water; I, however, stopped the only one with good tusks just in the nick of time, with a bullet through the back of the head from my .303 rifle. We could only take the head as the ice was moving west with the ebb-tide, and threatened to cut us off from the land; in fact we only just got through in time.

None of my chaps are in love with walrus-hunting, on account of the trouble the ice always gives us. We want meat however for the dogs.

September 14th, Saturday.—I set Fisher, Child and Armitage to carry the drift-wood we had brought round and stacked by Eira Cottage, up to the hut as we were running short of firewood. Recently we have been burning blubber with it to economise. I put in most of the day at the wash-tub in No. 2 hut, as my soiled

WALRUSES ON DETACHED PIECES OF ICE
(*Telephoto lens*)

clothes have been rather accumulating since we left on the boat journey.

The recent strong north-west winds have driven the ice off the land a little, and it now looks as if a ship might get in. Two "burgies," a skua, and a few kittiwakes were seen to-day, but no tringas, though one of the latter was seen by the pond yesterday.

September 16th, Monday.—Blomkvist, Armitage, and Child at work most of the day skinning looms, which are now frozen solid and have to be thawed first. The doctor was engaged with the walrus, Fisher at the botanical specimens. I photographed the three walrus heads, and finding that my hand camera is behaving worse and worse, set to work to find out the cause. I found that it did not discharge the exposed films properly, but that they jammed in the front of the lens. This I discovered after a good deal of trouble was owing to the spring of the pressure board having become weak and had crushed down. This, however, was quickly remedied.

The effect of the nickel-covered .303 bullets upon the heads of walruses is terrific. The fractures in the skulls are very extensive, and they have literally pulverised the bones in places, extremely strong and solid though they are. The bullets in all cases are quite broken up.

In examining a bullet-wound in the back of the head of one of the walruses the doctor found that the atlas (first vertebra) had been perforated by a nickel-covered government .303 bullet without smashing the bone in the usual manner, but had drilled a clean hole through, only cracking the bone on one side slightly.

All birds but skuas, kittiwakes, "burgies," "mollies," and snow-buntings appear to have left us, and only very few of these now remain. Winter and darkness will

soon be upon us, and the birds know it, and fly southwards to happier and brighter climes.

September 17th, Tuesday.—I saw a flock of five terns pass the hut. As none of these birds (except one on Bell Island) have been seen since the end of June, doubtless these had come from the north, and only call here for a few days in passing.

I am now accustoming myself to the half-plate-stand-camera, as I am getting very disgusted with hand-cameras, and shall probably take the former with me sledging in March, in spite of its weight and the trouble of frost-bitten fingers in using it. The results are far more satisfactory, and I consider that photography is of the greatest importance in undiscovered country such as this.

September 18th, Wednesday.—Four young ivory gulls made their appearance from the east as we came up from the boat. I started the doctor off at a run for my gun, and Fisher to a point half-way between the boat and the hut to relay him, and I met Fisher. Although the gun was fetched down in very smart time (under four minutes), the birds had nearly all cleared out. I, however, got a straggler and, after waiting about the point with the gun till dusk, I got another young one and an old one. Young ivory gulls are very rarely got, so that I was particularly anxious to secure specimens. I also shot two "mollymokes" (one young one) and a snow bunting for specimens. Saw a tringa too—probably a purple sandpiper—evidently on its passage south.

Young ivory gulls have dark markings on the back of the wings, not unlike those of the young snowy owl, but fewer in number. There are a few dark marks on the breast and back of the neck. The tail feathers are tipped with black, and there are dark markings round

the eyes and about the mouth on the lower jaw. The legs and feet are dark in colour. The ground colour all over the body is pure white. There are a few dark marks on the small feathers on the underside of the wings at the forejoint. The beak is darker than in the adult. The adult bird is pure white.

September 22nd, Sunday.—It has been blowing hard for the last two days, with driving and falling snow. This has driven the ice off the shore for about two miles, past which it does not seem inclined to go, showing there is much ice to the south.

The following are the results of our late tidal observations by Mr. Armitage :—

August 26th, 1895.—High water at 1.5 P.M. Height on tide-pole, 1 ft. 7.2 in.

September 3rd.—Low water at 4.28 P.M. Height on tide-pole, 9.7 in. (Taken from ten-minutes observations.)

September 4th.—High water at 9.47 A.M. Height on tide-pole, 1 ft. 6.8 in.

September 4th.—Low water at 4.35 P.M. Height on pole, 5 in. High water at 10.45 P.M. Height on pole, 1 ft. 7 in.

September 5th.—Low water at 4.7 P.M. Height on pole, 7.4 in.

The tides at Cape Flora come in from the south, and run to the eastward along the coast with a rising tide; and go out and run to the westward with an ebb tide. They are, however, greatly influenced by the winds in the above respect; and with a wind of force 6 and above from an easterly or a westerly direction will either remain neutral or flow slowly in an opposite direction to that which they would take if the weather were calm.

The winds also appear to affect the rise and fall of the tide.

The range of the tide appears to vary between 1 ft. 1 in. and 1 ft. 3 in.

The highest tide registered on the tide-pole was on September 3rd, at 9 A.M., 2 ft. 0·2 in.

The lowest tide registered was on August 27th, at 9 P.M., 2·2 in.

The tide appears to turn and run to the westward about twenty-five minutes before it has finished rising ; and the same alteration occurs before it has finished falling. The tide moves very slowly at neaps, and is slack for a considerable period of time.

At springs it moves with rapidity, at about two or three knots per hour, and there is practically no slack water.

I have been engaged at the wash-tub all day, endeavouring to get level with an accumulation of dirty clothes. The difficulty in getting water is always felt on these occasions, as we have to melt snow over a small stove to obtain all the water we use.

September 23rd, Monday.—Fisher, Armitage and I got up the two Norwegian boats from below the steep slopes, and took them up to the hut. While so engaged a number of young ivory gulls appeared, and I told Armitage to take a gun out and shoot what he could for specimens. He got four. I afterwards took my gun and shot five more and a young glaucous gull. I also killed two ringed seals in the water near the tide pole, but both sank.

We built up the wall of tinned meat cases that was blown down in the last gale, using snow and water as mortar. It doesn't take long to freeze !

The bay-ice is now making fast, but the wind and current keep the ice off shore constantly in motion and break it up.

The ice is now all back again, and promises to make rather a rough bear-hunting ground for us during the winter, and it will be difficult to run over in the darkness. I took some photos, with the half-plate camera, of the ice.

The sun sets at the Pole to-day for the long Arctic winter—sun crosses the Equator.

We are using our driftwood for firing, mixed with blubber. It makes an awful smell and smoke. Indeed, everything in the hut gets coated with black grime; and, in spite of all our efforts to keep things clean, I fear a "first-class upper housemaid" might find fault with the result. The driftwood is so wet and sodden that it won't burn alone, and the blubber too makes it go much farther.

September 26th, Thursday.—The thermometer sank to zero during the night. Every one to-day has taken to "finskoos." * I have been engaged in making my map of the country to the westward from bearings taken on the boat journey; and Fisher in making a sketch of the peculiar aspect of the sky during the gale on July 30th, with the peculiar lathe-like marks and the odd phantom ship which we saw—or rather the three bare masts on the northern horizon.

Armitage is still working at the observations for position. The doctor was skinning birds all day. Two dogs broke loose during the night, and assisted by the rest of "Jinnie's" pups, now nearly full grown, set upon the largest of them and killed it. They are a nuisance, and it seems impossible to put a stop to their murder game. This is the eleventh dog that has been killed in this manner. We have only lost two from disease since leaving Kharborova.

* Lapp fur boots.

September 29th, Sunday.—Blomkvist came in to report two bears (a she and a this-year's cub) near the flagstaff. Armitage and I started out, and I also allowed another man to bring a rifle, provided that he kept the muzzle pointed away from us. We found the bears about two hundred yards west of the house, but on sighting us they made off across the new bay ice at a fast rate, with Armitage and me in pursuit, keeping out of sight as much as possible. (The other man returned as he had come out—in slippers.) I left Armitage hidden behind some boulders at the edge of the ice, and I started off towards the glacier to try and head them off, as they had again approached the shore. I was, however, unsuccessful, and although I followed them right across the glacier as far as Windy Gully, and played "at seal" to try and bring them up, I never managed to get within four hundred yards of them, and they finally disappeared in the direction of Bruce Island. She-bears with cubs will always clear out if they can, but if brought to bay with dogs or unable to distance us, which under ordinary circumstances they easily can, owing to having a small cub with them like those I got in March on Mabel Island, are distinctly lively, and one has to keep one's eyes open to avoid getting into trouble.

September 30th, Monday.—At about 7.30 A.M. I heard the dogs barking loudly, and Blomkvist ran in to say that a bear and cub were near the flagstaff. I started out with a coat over my pyjamas accompanied by Armitage. I found the two bears, evidently our friends of yesterday, on the bay ice below the flagstaff. The instant our heads appeared over the top of the slope they took to their heels. I planted a .303 bullet at a long range in the hind quarters of the mother, and Armitage also paid her a similar attention, but without

stopping her, and they cleared out in the direction of Bell Island over the ice. Blomkvist, who had joined us, stayed to watch them while we dressed and got breakfast. He then came in to say that the bears had returned towards the shore near the point to the west, and the she-bear appeared to be very badly wounded, being covered with blood, and had lain down behind a hummock. We started off with our rifles again, but found that they had again moved on, and by following their tracks along the face of the glacier, espied them at least a mile and a half off on the ice, making gaily for Windward Island, safe from us, as the ice is newly formed and very thin and unstable.

All the dogs, except the bear dogs "Räwing," "Nimrod," "Sally," and "Jinnie," were to-day shut up in the dog kennel for the winter. I did a little more photography and then went on with the mapping. The doctor was skinning specimens.

The weather has been clear and sunny, but with a stiff breeze and 21° of frost all day. Two young ivory gulls, a young kittiwake, and a young loon, sitting on the bay ice, were seen to-day, having been left behind by their parents. To-morrow pheasant shooting begins at home. If a bear would come our way, I wouldn't exchange him for the best pheasant shooting in Norfolk. Still, I should like a day or two at the latter, if I could get back here again when it was over.

October 5th, Saturday.—It has been blowing in fierce gusts from the northward all the early morning, and has carried away part of the packing-case wall. I went for a walk towards Sharpe's Rock and then struck across the bay on the young ice. The wind dying down and the light being good, I brought out the half-plate and hand cameras to do some photography. While so engaged

on the floe, Heyward reported to me that a bear was in sight towards the west point. As Blomkvist was exercising the ponies, I got my .303 rifle and jumped on "Blackie," and, followed by Blomkvist on "Brownie," to hold my "gee" when I required to dismount, I started in pursuit (the first time, I should say, a polar bear was hunted on horseback). Fisher followed on foot, with "Räwing" and "Sally" on a leash, in case I wanted them. I rode as far as the edge of the glacier and then dismounted, leaving Blomkvist in charge of the two ponies, and running across the young floe, as the ice was too thin for the pony, tried to cut the bear off. The strange object of a man on horseback had apparently scared him, and I was unable to get within reasonable shooting distance, he eventually took to the water and got out of sight. Armitage and the doctor saw another bear out in the bay while taking a stroll in the afternoon, where I had been in the morning.

These ponies are not exactly ladies' hacks, and their paces are not over comfortable. They are very straight in the shoulder.

After lunch Blomkvist and I made an imitation seal out of wood, to which I nailed some walrus flippers to make it more realistic, and daubed it over with black lead and walrus fat. It is a wonderful production! Let us hope bears are credulous. This I have placed out on the floe. I think it may act as a decoy to bring up bears. Near it I have placed a very hard frozen walrus flipper as a second course. It will take a bear a long time to get his teeth into it. The bogus seal and this will afford him entertainment for a long time.*

* A bear removed the dummy seal some weeks afterwards. I don't know if he managed to eat him. I hope not for his sake—not that bears have delicate digestions, but I think our seal would tax them.

I weighed thirteen stones eight pounds to-day when the doctor weighed us. We have all put on weight again.

October 7th, Monday.—I, helped by Fisher, took the scurvy grass out of the ice cellar in the floe-berg and placed it in a packing-case upon the roof of the hut handy for use. To my surprise I found that in spite of the low temperature (we had had 16° F.), that some of it where it had lain in considerable mass was unfrozen and quite wet. The plant had evidently acted as a hot-bed, the latent heat in it having prevented its freezing in the centre of the heap. The roof of the cellar was covered with ice crystals, caused by the condensation on it of the moisture given off. We had some for lunch, and found it as fresh and crisp as ever. There is now, I think, no doubt as to the success of our experiment. After lunch I made our bear dogs comfortable in empty biscuit casks for kennels, and placed them in positions of vantage near the hut to give us notice should a bear approach. The doctor has been skinning birds (specimens) and Child has been repairing the anemometer, which was blown down.

October 10th, Thursday.—Fisher this morning saw a dovekie in its winter coat on the rocks at the entrance to Windy Gully. It was entirely white, he tells me. I did three hours photography this morning, and experimented with the telephoto lens. There is very little light for photography now.

We burnt the last of our blubber to-day, and as the driftwood is too sodden to burn without it, we shall have to use coal, unless we get a bear or a walrus at once. I am beginning to fear that the number of bears killed last winter and spring, when we got sixty, is the cause of their comparative scarcity now.

October 12th, Saturday.—Blowing very hard from the east all day. Not a speck of open water is now to be seen, the wind having brought in before it great quantities of ice. The pressure has crushed up the newly formed land-floe east of the Flagstaff Point, now about eighteen inches thick, and high piles of ice, broken up into squares about twenty feet high, are heaped up on the shore, and forced up against, and in some cases, even over the tops of bergs in the bay.

The hut, owing to shrinkage, is letting in chilly breezes in all directions, rendering the atmosphere very cool indoors. I have been trying to remedy this by caulking the open seams, using paper soaked in thin glue for the purpose as we have no oakum left. In the evening I went on with the mapping. Fisher has been engaged all day with the botanical specimens; Armitage in again working out the observations for position taken on our second sledge journey to ensure accuracy. Child has been doing a variety of small jobs, and the doctor has been re-labelling the geological specimens collected on the boat journey.

They all played cards or read in the evening, as usual, and every one is contented and happy. The interior of our hut we have made very snug and comfortable, and the duties and routine of the day are performed as regularly and smoothly as clockwork. Each man has his allotted work, and does it well. We are always busy, and consequently the depression complained of on some Arctic Expeditions is unknown to us. I try to keep civilisation as present amongst us as circumstances will allow, and believe in every one being as civilised as possible in his daily life. This is very necessary in such a position as ours, for man quickly degenerates if he allows himself to do so, and it is by neglecting

the little observances of civilised life that he imperceptibly starts on this downward course ; one thing quickly leads to another, and total demoralisation is not far distant. I can say positively that throughout our three years sojourn in Franz Josef Land the most fastidious lady in Belgravia might have looked in upon us without seeing the smallest thing to shock her feelings.

October 13th, Sunday.—An overturned berg off the shore now shows a surface to which a quantity of soil is adhering, containing shells, small boulders covered with lichen, and other indications of land life, showing that this soil, &c., was picked up on the land. We are collecting specimens from it. The shore is lined with huge piles of ice-blocks from fifteen to twenty-five feet high, which have been forced up the inclined beach twenty or thirty yards by the gale. No one would credit the tremendous power exerted by ice without seeing some such proof. This, no doubt, occurred on Friday night, although no one heard the noise of it, but the roar of the wind would no doubt effectually prevent it. The bay where the *Windward* lay has escaped all this, and it is, I think, as safe a spot as any on the Southern coast of Franz Josef Land.

Heyward shot an adult ivory gull to-day and saw a "mollymoke."

CHAPTER XX

WE SUFFER SEVERE LOSSES

October 15th, 1895, Tuesday.—The doctor was engaged all day in labelling the geological specimens. Fisher is examining the mud taken from the overturned iceberg under the microscope. So far he has found two or three diatoms. Armitage is still at the observations for position. In the afternoon I went on with the mapping. Heyward rides the three ponies out for exercise every day, and is engaged in making a canvas saddle, which promises to be a wonderful production, and must be the identical saddle that the Grand Llama of Tibet gives his visitors to ride upon. No sign of a bear, and the whole country appears now to be lifeless.

Not a tea-cupful of open water to be seen. I fear we shall have it frozen up in the condition the sea now is, which is very rough, for the winter, if the easterly wind does not cease blowing, as it keeps the ice packed up tight. The sun was $1^{\circ} 30'$ high at noon to-day.

October 17th, Thursday.—I took the cameras and went out to a berg off flagstaff point, which had had a large quantity of heavy ice forced upon it, to try and photograph it. The light is, however, now so dim it is impossible to get a good negative of ice, even with the long exposures I am now giving, and all the plates turned out failures. After lunch I walked west round the point and examined the ice up towards Meirs Channel; I found that the pressure had not extended up there to any great

extent. My half-chronometer watch has recently taken to stopping when exposed to cold for only a few seconds, as in timing a photographic exposure. The swing of the fly-wheel is too short. I feel sure that the trouble is due to the oil in it having become thick. This must be guarded against on future expeditions.

Fisher is working at the botanical specimens; the doctor at the geological; Armitage at the meteorological observations. Child has been trying to manufacture some stirrup irons and spurs, the latter out of a pair of aluminium rowlocks. Necessity is the mother of invention, they say. All birds appear to have gone now.

October 19th, Saturday.—The sun at noon to-day being now 10° on the other side of the Equator (90° off us) sank for the long polar night of one hundred and twenty-two days—one hundred and twenty-two days of darkness! It was snowing and overcast the whole day so he did not show to say good-bye to us, but about a quarter of the upper limb may show to-morrow.

I sent Fisher and the doctor with flags to mark out an even track on the land-floe for us to exercise on, without falling over hummocks when the darkness becomes more intense. It quite recalls the polo ground at Hurlingham but that the surroundings are somewhat different. I set Armitage to hoist a large flag of sacking on the haulyards below our Jack on the flagstaff, to attract the curiosity of bears that may heave in sight of it and so bring them our way. In the afternoon I went on with the mapping. I hardly think the land or islands we sighted north of the 81° N. L., and to the north of Cape McClintock is Payer's King Oscar Land as I then thought it might be. It was very misty, but it must be land closer at hand. Armitage went on with the observations, and Fisher and the doctor attended to the specimens.

October 21st, Monday.—I set the doctor, Fisher, and Armitage to fix flags to make the track for our exercise in the dark time to come, which will soon be upon us. We all then went for a walk over the floe towards Cape Gertrude. We found the way there very rough and bad for sledging the wood over. There are also several places where the ice had opened when it was crushed up

WALRUS HEADS

by the easterly gale, and would hardly bear the ponies with safety.

After lunch I went on with the mapping; Armitage worked out the observations for position; the doctor examined and labelled the geological specimens; Child fixed up the anemometer and mounted it; Fisher did some mending on his own account.

It has been a fine, clear, still day. The weather this October so far has been a great contrast to that of last

year, both in the absence of gales and of much snow. The sun showed by refraction to-day.

October 28th, Monday.—As I considered that one or two more marks are necessary to indicate accurately any movement in the glacier east from here, I sent Armitage and Fisher to place more flags on it. The doctor and I completed the road through the crushed-up ice on to the floe near Eira Cottage, and marked it with six flags to be able to find it in the darkness. We then all went for a walk to the west.

After lunch Armitage worked at the observations, Fisher went on with the botanical specimens, the doctor made a list of the geological specimens. I completed a pair of leggings I have devised, and went on mapping.

Our three bear-dogs "Räwing," "Nimrod," and "Sally," went off on their account about 1 P.M. and have not yet returned. They have apparently come across a bear.

October 29th, Tuesday.—I walked out accompanied by Fisher, to try and ascertain by the tracks in what direction the three missing dogs have gone. The light fall of snow and drift had, however, completely obliterated all marks of that kind. Armitage, Fisher, and Child had previously been engaged on a similar search. Heyward, riding the brown mare and leading the black pony, took them down near to Sharpe's Rock, where the high winds have exposed a little frozen grass. The latter is off his feed, and although I have tried him with hot oatmeal mashies, and some of our remaining hay, oats, &c., he can be induced to eat very little of anything. Grass, although he can get very little of it, he appears to have an appetite for. A tonic is what he requires no doubt, but we have no gentian or any other drug suitable. I set the doctor to get out the dog traces

and a reindeer-sledge to take the dogs out and get them in form ready for the spring sledging. He brought a walrus head into the hut to thaw preparatory to cleaning and curing it. Our very small accommodation (12 feet by 13 feet) is usually lumbered up with all sorts of things being thawed or worked upon.

Armitage worked at the positions. It was well for Mr. Leigh Smith that he wasn't wrecked here in a season like the present with no open water and no bears. He and his party would have starved.

October 30th, Wednesday.—Blomkvist announced to me this morning that the bay mare pony had been found hanged by her halter in her stall in the stable. On making inquiries I learnt that this had come about owing to the manner in which it was fixed and had tightened round her throat. This is a dreadful misfortune, and reduces our power to travel north by one-third, and leaves us now with only two ponies, one of which is ill. We made the best we could of the matter by adding her to our larder, however. Having skinned the pony and cut the meat up into joints we all went for a walk. After lunch the doctor cleaned the skin for curing. I continued my work with the maps. Armitage went on with his work at the observations.

Our dogs have not yet returned. I had "Rags" let loose to-day to try and make a bear-dog of him.

October 31st, Thursday.—Two of the dogs returned in the night, but "Sally," my little Samoyad bitch has not come with them. I fear that a bear has killed her or she has died from exposure, as recently she has been losing her coat, caused by giving birth to pups, and for some time I have kept her in the house at night on that account.

The doctor and Fisher took a team of seven dogs out

on the floe for exercise and practice in driving them. After lunch Armitage went on with entering the meteorological observations. The doctor cleaned a walrus head, and Fisher helped me with the mapping. Child was engaged in manufacturing glass paper. I send every one out for a good walk every day unless the weather is too bad. Walking in the darkness and bad weather is rather a penance.

Cut through the bay ice in the bay, and on measuring it found it to be twenty-one inches. We began our two-hourly meteorological observations to-day extending throughout the twenty-four hours. I took the first of the night watches from 10 P.M. to 2 A.M.; the doctor from 2 A.M. until 4 A.M.; Child from 4 A.M. till 6 A.M. Armitage turns out at 8 A.M. to take the readings then. We now have breakfast at 10 A.M. instead of 9 A.M. Fisher will relieve the doctor and Child alternately. Armitage takes the readings throughout the day with occasional help from others.

"Blackie" is still suffering from irritation of the bowels caused partly no doubt by the croton oil I administered; it is the only purgative we have at all suitable. Horses require such a quantity of physic. I wish I had some aloes. I administered to him this morning one drachm of opium mixed up with flour and water and wrapped in paper. He is still off his feed and gives me considerable anxiety. After lunch Armitage and I mounted the George's barometer in the barometric shed. We began on the scurvy-grass as a salad for lunch to-day. We shall use it twice a week for the present.

November 2nd, Saturday.—The black pony is still clean off his feed, and gives me much anxiety, as this can't go on much longer, and he looks like a plate-rack.

managed after some trouble to administer about a

quart and a half of warm oatmeal gruel with port wine in it to him this evening. I tried a variety of devices to get it down him, but found a wine bottle the best to drench him with. This evening after dinner I gave him thirty grains of sulphate of quinine and one drachm of sulphate of iron in a bolus. I hope this may wake his appetite up.

The doctor weighed us all this evening. I weigh 14 st. (196 lbs.). I evidently want a few bear hunts to get me back into good training weight.

November 4th, Monday.—As the black pony has eaten nothing during the night, I drenched him with about a quart of oatmeal gruel this morning. The doctor, Child, and I, cleared some more grass of snow and led him to it, but he would not touch it. On bringing him back to the stable I removed all snow from his manger, and put in the place of it about a quart of strong condensed milk. This will help to feed him, and he will drink this if he can get no snow. Am really very anxious about him as owing to the accident we have only two ponies left.

The weather is still very calm and we have had remarkably little snow this autumn compared to last. In the same way as I thought the open water of last autumn and winter caused to a large extent the constant gales (often when it was blowing furiously half a mile from the edge of the water, on going close to it there was only a gentle breeze noticeable) so it probably did the heavy snow-fall. I now think that the ice being crushed up against the land leaving next to no open water possibly for a hundred and fifty miles south of here, practically makes the climate continental in character at present, instead of insular. Anything more striking in the difference in climate between this autumn and last it is impossible to imagine.

But still the darkness is telling on sleep and spirits.

November 5th, Tuesday.—I led the black pony, in which there is no improvement, out for exercise, and to try and get him to eat a little grass. As I cannot get him to eat anything, I drenched him with about a quart and a half of rich milk (half a pound of milk) with three ounces of chlorodyne in it. After dinner this evening I gave him more milk with one ounce of chalk and three ounces of chlorodyne in it. He is evidently suffering from enteritis.

The moon and a few stars were shining brightly at noon to-day.

November 6th, Wednesday.—Blowing from a fresh to strong gale nearly all day with driving snow, and a temperature of 10° to 15° F. Being overcast and the driving snow rendering a walk on the ice a little difficult, we all did the "Row" (our row of flags on the land floe in the bay). I walked about four miles.

Three times to-day I have drenched the black pony with half a pound of condensed milk to about a quart of warm water with one ounce of chalk and three ounces of chlorodyne in it. He is still purged, but looks a little better I think.

November 7th, Thursday.—Still blowing strongly with driving snow. I took four and a half miles exercise in the "Row" in the morning, and all the others likewise took a walk on the ice. In the afternoon the doctor stopped a tooth for me, the stopping of which had come out. He is wonderfully expert at dentistry. Armitage wrote up the observations.

I dosed the pony three times to-day with half a pound of milk, one ounce of chalk, and three ounces of chlorodyne, and three ounces of spirit. He seems much the

same. Blomkvist tells me he was perspiring early this morning.

Weather : Noticed a peculiar aurora a little after midnight. It showed from behind a stratus cloud from S.W. about 20° altitude, emitting at intervals puffs of cumulus-like aurora, which slowly made towards the east.

November 8th, Friday.—I walked five miles in the "Row" this morning, all the others also went for a walk on the ice. Still blowing freshly with driving snow, and about 16° F. most of the day.

After lunch Fisher worked at the botanical specimens ; Armitage wrote up the meteorological observations : I wrote up and entered the observations, &c., taken on the spring sledge journeys ; Child did various odd jobs.

I drenched the black pony with half a pound of milk, three ounces of chlorodyne and three ounces of spirit, mixed in one quart of water three times, to-day. He has not been purged for twenty-four hours now, so I left off the chalk. He looks more lively, but won't touch a mouthful of anything of his own accord. He is being kept alive willy nilly.

November 9th, Saturday.—The doctor and I went for a walk over the floe east to within a mile of Cape Gertrude. The moon shining brightly gave us a fairly good light. We got back at 3 P.M. Some brilliant streamers of aurora were to be seen in the S.S.W. sky at noon, at an altitude of 70° .

After lunch the doctor went on making a list of his geological specimens ; Fisher examined some of his botanical specimens under the microscope ; Child repaired my camp case, which had become much damaged by sea water during the gale at the end of July off Cape Lofley ; I wrote up the meteorological observations taken on the sledge journeys.

I gave the black pony half a pound of milk and three ounces of spirit to-day three times, and this evening I added three ounces of chlorodyne. He still eats nothing at all.

November 10th, Sunday.—Blowing freshly from the east, with driving snow, increasing in force as the day went on.

We all did six laps in the "Row," being equal to nearly three and a half miles.

I drenched the sick pony three times to-day with milk, and had him walked about for half an hour on the ice. I only gave him alcohol and fifteen grains of quinine in the milk. He has eaten a little hay to-day, which is a sign of improvement.

November 11th, Monday.—Blomkvist came in to report to me with a very jubilant countenance that the black pony is eating his oats and hay in his usual manner. He will now be all right, I hope. I gave him, however, two doses of quinine (15 grains each) to-day to guard against a relapse of his appetite.

We all did the "Row" in the morning. I walked four miles. Arctic treadmill would be a more suitable name than Rotten Row, I think!

November 13th, Wednesday.—Blowing a fresh to strong gale all morning, with the temperature about 15° below zero; and at 4 P.M. it strengthened into a whole gale. We all did the "Row" before lunch, and walked about four miles. We availed ourselves of the shelter offered by the plateau, and only followed the flags half the distance.

November 14th, Thursday.—The stormy weather which began at the end of September last year appears to have been delayed until November this year. It has been blowing hard off and on the greater part of the day.

Every one went for a walk in the "Row" this morning. The black and the brown ponies were exercised, and I rode the latter for a mile or two round the flags. The black pony is still very unwell, and to-day his appetite is falling off again. We administered twice an ounce of glycerine, and as that had not the desired effect, this evening I gave him three ounces of sulphur in some milk.

All of the men have been busy at various occupations. I was occupied with the pony most of the afternoon.

November 17th, Sunday.—Poor "Blackie" is a perfect nightmare to me, for to lose him will be a very great loss to us. He is a most disheartening animal to doctor, for as soon as he is cured of one ailment he lapses into another. I hope, however, to save him yet.

We all took exercise on the ice this morning, walking about three and a half miles each.

The ice off shore has been in motion most of the day, groaning and shrieking like a host of demons. We had a small concert this evening, when Armitage and the doctor sang several songs, and we joined in the chorus. It made a cheerful evening and a change.

November 18th, Monday.—Blomkvist came in to tell me that the sick pony was lying down in his stall. I went out, and found he was *dead*. The doctor and I made a post-mortem examination to ascertain his exact condition. It is evident to me that the 30 m. dose of croton oil had really little affected his condition, and that he has been suffering from what amounts to stoppage, through atony of the bowels, ever since we began to doctor him. His case was evidently a hopeless one from the start, at all events without aloes, of which we have none. This is a most disastrous blow to us, and the

fatality lately amongst our animals has been a very bad piece of ill-luck indeed. We have now only one pony left, and she is anything but a good one.

We all took exercise on the ice either in the morning or the afternoon. No bears up to the present. It looks as if we have shot them all out. I want meat for our dogs badly.

November 19th, Tuesday.—All the members of the Expedition went for a walk on the ice this morning. I took out the bay mare and rode her for two miles and a half round the "Row" for exercise. I afterwards walked another two miles. It was very dark and snowing heavily.

After lunch Armitage wrote up the meteorological observations; the doctor finished his list of geological specimens; Child repaired and cleaned the musical box; I did odd jobs, and continued my writing and mapping. The thermometer sank to 25° below zero to-night—the coldest we have yet had this winter.

Several of the Expedition have been complaining of sleeplessness since the darkness began. Nordenskjöld speaks of this trouble with his party during the one winter he spent on the north coast of Spitzbergen; and when travelling through the country bordering upon the White Sea and Lapland in the end of the winter 1893 to 1894. I found the people at Vadso complaining loudly of the same thing during the arctic winter there, although the darkness of their winter is not nearly so long or so intense as ours on the 80th degree. In fact they always get some twilight at noon.

November 20th, Wednesday.—Blowing a fresh to a strong gale with the temperature at 20° F. below zero. Rather cool. We all went for a walk on the floe round the "Row" in the morning with our faces carefully

protected. As it is now very dark at mid-day and practically no difference between the light then and at midnight, I gave orders that all when going far from the hut are to take a fire-arm of some kind as a protection against bears; as they might sneak on a man in the darkness and be on him before he was aware of it.

About 8 A.M. I was told that the dogs ("Jinnie" and "Räwing") were barking on the floe opposite Flagstaff Point. I hurriedly tumbled into some clothes and accompanied by Armitage started off with our rifles. By the sound of the barking I could hear that the bear was making for the open water, and we started off through the tumbled masses of crushed-up ice which extend beyond the bay floe. We were, however, unable to come up with him, and he made off in a westerly direction and finally crossed on to some thin new ice and disappeared. We found it very difficult to make our way through the rough ice in the darkness, our progress being more of the nature of clambering than anything else. "Jinnie" behaved very well and is quite coming out in the character of a huntress. I bestowed upon her the Distinguished Order of the Bear Dog and the privileges of it.

November 22nd, Friday.—Just as I was finishing undressing after taking the meteorological readings at 2 A.M., the dogs began a loud barking, so slipping a coat on over my pyjamas I went out to inquire the cause. On going outside the hut I heard a dog barking at the flagstaff, and what sounded exactly like the hiss of a bear in the same direction. I hurried in and got my rifle and started off, but soon found that it was a walrus in the open water that caused the disturbance amongst the dogs, whose blowing I had heard, and which at that distance sounded like a bear's hissing nearer at hand. About 9 A.M. as I was just finishing dressing I heard "Nimrod,

who is chained to a kennel heaped over with snow for warmth, just outside the hut, give his peculiar "bear bark," and a moment after Blomkvist, who had gone out to investigate, rushed in to tell me that a large bear was within a yard or two of the dog. I immediately seized my rifle and hurried out of the door and suddenly came upon "Mr. Bear" within three yards of me by the barometer shed, he having evidently left "Nimrod" to follow Blomkvist into the hut. I fired at him and knocked him over, and at the very short range must have burned his coat with the powder, but he picked himself up and sharply turning the corner of the coal sacks got out of my sight, and it was not until he was nearly across the pond that I could fire at him again. The distance combined with the darkness prevented this shot being an effective one. I followed him down the steep slope on to the floe which he made for with the dogs at his heels. But I soon had to return, as I was hardly dressed for a bear hunt, having rushed out to rescue "Nimrod" in my shirt sleeves, without a cap, and only fur slippers on, both of which came off directly I stepped into the snow, and the thermometer stood at 17° below zero. I returned to the hut and quickly adding to my scanty attire, started off again, followed by Fisher and Heyward. The bear made off eastwards, and although he several times stopped to make rushes at the dogs I was not again able to come up with him, as the extremely rough ice and the darkness put fast running out of the question. He eventually took to the water and the dogs returned. Bears are again looking us up, but we are having bad luck with them.

November 24th, Sunday.—Still blowing hard, but the thermometers have risen to 18° below zero. We all went for a walk on the floe in the morning. I wrote in

with ink my sledging journal after lunch; the others read and smoked. We have the moon back to-day, which we are very glad of.

The doctor has made a face-guard for me, as I have got a good deal bitten about the face owing to my guard not lying close enough to it. He is an excellent tailor.

November 26th, Tuesday.—All hands went for a walk on the ice in the morning. I took out "Brownie" and rode her round the "Row" three and a half miles to give her exercise. The wind has shifted to north-north-west, and was blowing in fierce gusts up to force 10, driving hard shotty snow before it. One particularly strong gust nearly toppled the pony and me over.

Every one is keeping in capital spirits and in good health.

November 29th, Friday.—Weather very overcast, with snow falling. The barometer is, I believe, lower than in any of the readings registered since we landed September last year, not even excepting those registered here during the time we were out in the gale in the whale boat off Cape Lofley.

We all went for a walk on the floe in the morning. I gave the doctor instructions to take two of the 9 ft. 6 in. sledges on to the ice for us to practise dragging them with various weights upon them.

Armitage rigged up a new flag on the flagstaff to attract bears, as the sacking one fixed there some time back is blown to shreds. We did three and a half miles round the "Row" before luncheon.

As we have quite run out of ink, Child is manufacturing some which promises to be quite satisfactory. I fixed up a camera on the floe this afternoon with a rapid plate to get a moonlight photo of the tumbled about ice on the floe. I gave two hours exposure (clear

sky and the moon full to-morrow). The moon was behind the camera and shining on the ice. Stop F. 11.

Child made a box to hold three cameras to protect them from wind, and I am giving them three hours exposure for the hut and other buildings to-night. I think moonlight will give excellent results. I have not heard of it being tried in the Arctic before, or indeed satisfactorily anywhere.

I heard a fox "quarking" up the talus to-night.

December 1st, Sunday.—Went for a walk on the floe round the "Row." While there I heard the barking of dogs out on the ice to the southward. By the manner of their cries I felt sure that they were either after a bear or else were teasing a walrus on the ice. I ran up to the hut and got my rifle, calling Armitage and the doctor to come also with theirs. By following the barking of the dogs and clambering over extremely high rough ice we arrived at the scene of the commotion. We found the cause of it to be four walruses lying on the ice, about eight yards from a large hole broken by them through some thin bay-ice on the edge of the more solid floe. They were separated from this hole by some low hummocks. The position in which they were lying makes me feel sure that walruses are not afraid of bears. A few shots settled all four of them, and we returned to the hut (about a mile and a half off) to get help in cutting them up.

After having lunch, which was on the table, all hands returned to the spot (except Child, who had bruised his knee, and Heyward, who was occupied in cooking), with knives, &c., and a sledge.

We took off the four heads and removed the hearts, which are the best part of a walrus, and a quantity of meat, and after a great deal of trouble, as the ice was

very rough for the sledge, and we had to carry the heads a great part of the way (they weighed over a hundred pounds each), we got them up to the hut soon after 9 P.M.

After dinner (the moonlight photographs taken yesterday have turned out very satisfactory indeed), I took out two cameras and fixed them up on the floe with rapid plates, and a two hours exposure to get photos of the ice and the scene of our walrus-shooting. It is a full moon to-night with nearly a cloudless sky and only a light breeze (force 1) blowing. I fetched them in after my watch. The largest walrus (all four were bulls) measured—Length, from nose to tip of hind flippers, 12 feet 6 inches; girth (around chest), 10 feet 6 inches; length of tusks, 17 $\frac{3}{4}$ inches outside the gums. The two smaller weighed about 25 cwt. each.

December 4th, Wednesday.—Blowing hard again from the east, with driving and falling snow, misty and overcast. This is a climate!—the most villainous in the world I believe. We all went for the usual walk on the floe after breakfast. I also took “Carlo” out with a light Norwegian sledge to teach him to draw it.

December 6th, Friday.—Early this morning I heard the dogs barking out on the floe, and expecting that the cause of the noise was a bear, I sent Armitage and Blomkvist away to shoot it, which they succeeded in doing. It turned out to be a young she-bear with two small foetuses in the bifurcated uterus. This upsets the theory that pregnant females always lay up throughout the winter. The remains of a seal were found in the stomach. She had about an inch of blubber on her. We sledged her up to No. 2 hut, and the doctor, Armitage and Blomkvist and I skinned and cut her up in the afternoon.

In the evening the doctor and Blomkvist removed the blubber from the skin. We shot no she-bears at all during last winter, neither did Leigh Smith the winter he was here—all being males. The doctor searched for a thymus gland, which is said to be present in all animals that hibernate, but could find none. I have no reason to believe that these animals do hibernate, but think that the females lie up for a considerable time before bringing forth their young.

December 7th, Saturday.—At 7.15 P.M. I was awakened by hearing “Nimrod” barking loudly. I hurried outside the house in my pyjamas, and could then distinguish “Räwing” and “Jinnie” yapping vigorously out on the floe to the southward about a mile off. I hurried back into the house and put a coat and pair of breeches on over my pyjamas and tumbled into a pair of skin-boots. Hearing Blomkvist moving I told him he could come too if he liked. Off we started in the direction in which we could hear the dogs barking; over some of the roughest ice and the deepest snow I have ever clambered through, and it being very dark with a thick mist, walking over such stuff was especially difficult. We eventually came upon the bear, and found him standing near a berg with the dogs barking around him and he making rushes at them which they cleverly dodged. Blomkvist and I then separated, and I went up to the bear to within ten yards—I could not see him distinctly further away—and gave him a bullet in the neck just behind the left ear, which knocked him over and ought to have settled him outright, but he floundered around and Blomkvist shot him in the right shoulder. This, however, did not satisfy him, and I administered another bullet behind the left shoulder, which laid him out. He was a large he-bear.

When returning to the hut I had the misfortune to fall backwards amongst the pinnacled ice and to break my .450 Express rifle through the grip. I then turned in for an hour or two, only having had three and a half hours sleep before "Nimrod" announced the bear. I left orders with Armitage to get the bear skinned in the open while warm and to bring the hide in on a sledge

ON GUARD

(the ice was far too rough to sledge the whole body up to the hut).

We were all regaling ourselves and our bear-dogs (except "Nimrod," who was outside on guard) with a little afternoon tea and biscuit, when "Nimrod" set up a loud bark which suggested the proximity of another bear. I told Fisher to let "Räwing" out, and he went to the door with him, but returned in a second or two to tell me that there was a bear close to the door, which had

made a dash at "Räwing" as soon as he was outside the hut. I got my rifle (.303) and ran out, but being half-blinded by suddenly going out from the light into the darkness, and by the rush of vapour from the hut, at first could see nothing, but in a second or two could make out a yellow object very indistinctly which I knew to be a bear, about three yards off me. At this I fired. It unfortunately did not stop him, and although wounded (I afterwards found blood marks) he got away. The dogs prevented my firing a second time by sticking to him closely until too far off. He went straight across the rough tumble-up ice beyond the direction of the flagstaff, and although Armitage and I struggled through the snowdrifts and pinnacles of ice in the mist and darkness for some distance we never got another chance, and the dogs at last returned.

Child is at work repairing my damaged rifle; the doctor, Blomkvist, and I salted down the skin of the bear I shot yesterday during the evening in No. 2 hut. I cannot understand the cause of this sudden influx of bears after such a long absence of them. There is a reason no doubt. I have noticed before that a number have a way of appearing close together, and then an interval comes with none at all. May they roll in!

"Nimrod" came back from the bear-hunt with a wound on his rump and looking very much as if he had seen things which he did not at all like. He had had a near squeak evidently.

December 11th, Wednesday.—There being less mist and an improvement in the weather generally, I sent Armitage out in charge of a party with a sledge to bring in the four quarters of the bear shot on the 7th, the meat of which had been stacked in a pile. The weather has been too bad since to do this before. I

did various odd jobs and walked for two miles round the "Row."

After lunch I sent Blomkvist out to exercise "Brownie" in a sledge on the ice, and I took out "Carlo" putting an additional forty-four pounds on the sledge to-day. He is doing very well, and I shall make him a useful member of society yet. The doctor went on with the bear skin; Child went on mending my rifle stock; Armitage wrote up the observations.

Only a faint orange streak was to be seen on the southern horizon at midday to-day (the sky was then quite clear) which gave no perceptible light, and it is quite as dark now, and has been for some time past at midday as at midnight.

December 12th, Thursday.—Being a nice calm clear morning, although very dark, I sent Armitage out with a sledge and party to bring in the rest of the bear shot on the 7th. When it arrived I cut it up, keeping the best parts for ourselves and the rest for our dogs.

I took "Carlo" out in his sledge adding another sixty-four pounds to his load. He drew this but it is too heavy for the new hand at present, though his drawing powers may improve by-and-by. The doctor finished the bear skin and we salted it down and tied it up.

After about 10 P.M. there was a report that the dogs were barking on the floe. Armitage and I started off and I gave Child permission to come too with a rifle. We could however hear nothing, so I let "Nimrod" go, hoping he would guide us, but he made straight for the open water where I could hear walruses blowing and grunting. After listening for some time at the edge of the cliffs and hearing no barking, we came to the conclusion that it was walruses which had disturbed the dogs, and returned to the hut. A few minutes after

"Gladys" (a dog I had given to Armitage) was heard barking at the flagstaff, and Heyward came in to tell me that he believed he could hear a bear hissing there. Armitage, Child, and I, started out again, and found "Räwing" entertaining a bear by himself. As we approached to within twenty yards he retreated down the slope and Armitage and I fired, shooting him in the rump, and away he went across the floe towards the open water; we followed him as far as we could, but then came to a place where he had fallen through the ice, and as the barking had ceased I felt sure he had taken to the water and had swum for it. As the ice was evidently thin and covered with a coating of snow, I came to the conclusion that it would be unadvisable to go further in the darkness and mist. Shortly afterwards "Räwing" returned.

As the mist on the ice was very dense and the ice was unsound, I sent Child for a hurricane-lamp to follow the bear's tracks in the snow, and by the way in which he had avoided hummocks and picked the smoothest road, I am quite convinced that bears can see very well in the dark.

I am always anxious to afford my fellows amusement and give them sport, but doing so is very detrimental to the chances of a kill. I can always do better alone. One man is quite enough, for he can always get up within a few yards—say eight or ten—without alarming the bear, although always likely to be charged by him; but a number are sure to scare him, at all events scare many, although some are not alarmed at anything that may be done. Armitage whenever he was out with me last winter always separated from me, and almost the only bear that I got a shot at and actually missed bagging, was the one that "went

for" me on February 7th, and escaped badly wounded owing to my running out of cartridges. There is no doubt that the three of us approaching the bear to-night, and my having to speak in giving directions, alarmed him, and made him turn tail, and when once a bear turns his hind-quarters towards one in the dark it is all up. For one may fire at his hind-quarters till one is tired of it, and it won't stop him. It is betting about ten to one against a shot fired at more than twelve yards distant being effective in the dark, as one cannot distinguish the bear's head plainly further off, into which it is necessary to put a bullet to make sure of him.

December 15th, Sunday.—Our off day! I went for a walk around the "Row" in the morning, doing my usual three miles and a half. Every one went for a walk either before or after lunch.

After lunch Fisher amused himself by designing and decorating by drawings some menus for our Christmas feast.

The same thick, snowy, dark weather.

An aurora to-day gave sufficient light to cast a faint shadow.

December 17th, Tuesday.—It had been calm for some hours previous to 1.30 A.M., when during my watch I noticed a gentle breeze from the north-east. This increased so rapidly that in twenty minutes it was blowing a moderate gale, and the thermometer fell 6.5° in a few minutes. It went on increasing in force, and it has been blowing at storm force most of the day, and driving the snow before it with great violence. The thermometer fell to 20° F. below zero, and the sky cleared. During yesterday south-west airs and light breezes had been noticed during part of the day. It seemed as if the

north-east winds rushed down to meet them and drove them back. I have frequently noticed this before.

Sent every one out for a walk near the house this morning, having first tried the weather myself for an hour and a half. I found that with a face-guard there was nothing unbearable about it. We moved the three sledges off the floe on to the bank by the flagstaff, as I fear the storm may sweep the ice out of the bay. This is the hardest blow we have had since landing here. At times it is difficult to keep on one's feet, the driven snow is very dense, and the cold intense.

Fisher went on with the sketches. The doctor began to skin the two geese I shot last September ready for our Christmas fare, as they had been reserved for our Yuletide pot, keeping the skins as specimens. It is one advantage we have here. A goose three months dead is palatable—we don't have to bother with refrigerators!

After dinner the dogs gave an alarm of "bear"! I took my rifle and went out on the floe to investigate, but found them barking in play, and having a bear hunt drill on their own account.

I afterwards put in five hours in the observatory, helping Armitage with the unifilar magnetometer, taking observations for deflection and variation. A dark misty day and frequently snowing.

December 20th, Friday.—After breakfast Armitage came in to tell me that "Daisy" was yelping at the top of the talus in the same spot as she was heard yesterday. I put on some ice-spikes, and taking an ice-axe started up in the direction from whence I fancied the barking proceeded. After rather a nasty climb, as the talus rises at an angle of 45° at that point, and is six hundred feet high, the soil being as hard as rock, and coated with ice, I

reached the top to find no signs of the dog and no sound from her, as the barking had ceased soon after I started the ascent. I waited there for nearly half an hour calling and whistling to her, but got not a whimper in reply.

After a great deal of trouble and considerable risk, as one slip would have sent me to the bottom, where I should have arrived in rather a pulpy condition, I descended; when she again commenced yapping, a little to the left of where I had been under the rocks at the top. The tiresome little beast could get down easily enough with her four legs and natural aptitude if she had pluck enough to try, but in the dark it looks like a black pit below, and she gets frightened at the prospect. At all events it is hardly worth the risk to clamber up there in the darkness again to escort her down—to say nothing of scrubbing ones clothes to rags in the endeavour to stick tight.

December 21st, Saturday.—Thank goodness, it is the shortest day, and now the sun will begin to return to us! or rather we to it. At 5.30 A.M., during Child's watch, "Nimrod" woke me by barking loudly. Child went outside and returned in a few minutes to tell me that he could hear a bear hissing on the top of the high bank towards the floe-berg. I hurriedly put on a coat and a pair of breeches over my pyjamas, and took my rifle and started off, but soon discovered that the excitement among the dogs was caused by a number of walruses in the open water, and that the hissing heard by Child was a walrus blowing in the distance, which certainly sounds in the darkness like a bear near at hand.

After lunch Blomkvist asked for permission to try a little further west up the talus to where I ascended yesterday to reach the dog which is still up there, as that way up seems much easier than the one I went. I gave

him permission to do so, as he is a good climber and fearless, cautioning him against risking his neck unnecessarily, and giving him a pair of ice-spikes and an ice-axe. He was fortunately able to reach her from that direction, and found the dog in a spot from which she could easily have descended had she tried. He brought her down about thirty yards, and then naturally thought that she would follow him, she however immediately returned to the spot he had just fetched her from, and he had again to go up and bring her down! She appeared to be very much afraid of the steep slope, and her sole idea of movement was to go up, which evidently for a dog as for a man is easier than to descend.

December 24th, Tuesday (Christmas Eve).—Every one went for a walk on the floe in the morning. I found a bear had been round the "Row" since Sunday, and evidently disapproved of the presence or arrangement of our Jacks, as he has broken seven of them off about two feet above the ice.

Armitage and Fisher darned their socks, and I inked in my sledge journal, and together with Child helped the doctor with a dog that has to be operated upon. We have all been much bothered with sleeplessness lately: we very easily awaken, and then experience great difficulty in getting to sleep again. The doctor recommends twenty grains of sulphonal, which some of us are going to try to-night. Being Christmas Eve we had drinks and cigars, reserved for very special occasions, this evening. Every one was very merry. These sort of festivals are very welcome, and make a bright change in the somewhat dreary monotony of our lives.

December 25th, Wednesday (Christmas Day).—Overcast and dark during the morning, but towards the

evening the sky cleared a bit and the moon shone out. It was calm, with a temperature of 20° F. below zero.

We all went for a walk either in the morning or during the afternoon. We had our hair cut in honour of the occasion and a change of clothes. Several of us can act as barbers, although some of the heads after being operated on look rather as if they had been nibbled by rats.

The dogs apparently got on to the track of a bear about 2 P.M., but a long way to the westward, as Armitage, who was on the floe at that time, could only just distinguish "Räwing's" deep bark in the distance.

We had dinner at 8.30 P.M., and Heyward succeeded in producing a very *recherché* one. Various good things, in the shape of plums, sherry, and one bottle of our original dozen champagne, had been reserved from last Christmas for this occasion. The champagne, however, had been kept in too cool a spot, and was quite flat! I proposed the health of "Her Majesty the Queen," and remarked that we had added a little to her Polar possessions, and trusted that by this time next year we shall have added still more. I then proposed the health of "Mr. and Mrs. Harmsworth, Mr. Montefiore, and all our friends."

Following the honouring of these toasts I proposed the health of Dr. Nansen, Lieutenant Peary, Wellman, and their parties, and wished them good luck.

Armitage then proposed the health of "Our Leader," and made various very complimentary statements in reference to me, saying, among other things, that I "have all the necessary qualities of the leader of an expedition of this kind, mentioning pluck, energy, perseverance, and endurance, and stated that all would agree with his opinion that I only require time and money to achieve the highest point of my ambition—to reach the Pole."

In replying to and thanking Armitage and the members of my party for drinking my health, I thanked them all for the way in which they had worked to forward the interests and objects of the Expedition. I remarked that we had a nasty splash together off Cape Lofley, and I felt sure that the time we had there and our life together here would serve as a bond of union among us that would exist throughout life, and would always be a source of kindly feeling. I also stated that I am just as hopeful as ever of reaching the Pole if the land doesn't fail us, and that I believe nothing but a moving pack will stop us. Heyward was thanked for the good dinner he had provided, and Fisher for the artistic menu cards he had drawn for each person. The evening concluded with songs, liquor, and smokes at 2 A.M., and I think every one much enjoyed himself. I expect our friends have been saying: "Poor devils, they have no Christmas pudding this year." Hadn't they though! they have no notion what an idea those "poor devils" have of looking after themselves! And what a wonderful pudding Heyward produced out of nothing, French prunes, chopped small, taking the place of raisins, and other ingredients being absent. I hope all our friends are as jolly and as fit as we are. I took the meteorological watch from 2 A.M. till 6 A.M., when I called Fisher.

None of our bear dogs, who are hunting on their own account, except "Räwing" had returned, but we had him in and loaded him up with dog delicacies in honour of the occasion.

December 29th, Sunday.—A treat! A magnificently fine, clear, calm moonlight day with a temperature of 18° F. below zero.

We all went for a walk in the morning. I walked some distance along the edge of the bay ice near the open

water with my rifle. Then returned to the house, and took out two cameras and set them for a time exposure on the floe. After lunch I fixed up the half-plate camera in the wooden screen near "Bear Berg" for time exposures. I find that on developing the "landscape" films used yesterday that three hours exposure is sufficient for ice with F. 11 stop. All the negatives have turned out very well except one, which had been spoilt by movement. A dog had apparently smelt at the camera on the floe and had slightly moved it. I have changed the films several times this afternoon and evening.

After dinner Armitage and I took an observation of a moon-culminating-star for longitude. I took my rifle and, accompanied by Fisher and the dogs, went for a walk along the edge of the bay ice near the open water in search of a bear, but without success, and got back to the hut at midnight. The moon gave an extremely brilliant light to-day, due to the clearness of the sky and to the reflection from the snow. I have never in any other part of the world seen such brilliant moonlight. I could almost see the sights on my rifle. Even this light made us feel as cheerful and jolly as sandboys. Life seems to wear quite a different aspect.

December 30th, Monday.—Armitage, by his last night's observations for moon-culminating-star, makes our longitude $49^{\circ} 44' 37''$ 65 E. We intend to take as many absolute observations as possible to mean with this and the lunar we took last winter.

We all went for the usual walk this morning. A fresh breeze, driving snow, and a temperature of 23° F. below zero rendered the atmosphere distinctly bracing. The driving snow and slight mist prevented my taking further negatives to-day. I developed those taken yesterday after lunch to-day, and they have turned out extremely good.

"EVEN THIS LIGHT MADE US FEEL AS CHEERFUL AND JOLLY AS SANDBOYS. LIFE SEEMS TO
WEAR QUITE A DIFFERENT ASPECT."
(The ice-floes by moonlight.)

December 31st, Tuesday (New Year's Eve).—A fall of temperature to-day to 37.5° F. below zero, and the minimum showing as low as 46° below zero at midnight.

We all went for our usual walk this morning, and the fresh breeze made the cold very apparent. As the sky was clear and a bright full moon shining, I took the cameras out and set them up on the floe for time exposures. I changed the films every three hours, using stop F. 11 and "Rapid" and "Landscape" plates.

The breeze freshened up to a moderate gale at 10 P.M., but at 11.45 P.M., when I fetched the half-plate camera in, had died down to nearly a calm. This is the first time, I should say, that negatives have been taken with the thermometer showing forty below zero by moonlight on the 80th degree.

The ice has been cracking all day, caused by the increase of cold, as have also the timbers of the house, making loud reports. Frost smoke has been rising in dense black clouds from the open water, which still runs east and west off the land here.

After dinner we made a bowl of milk punch, and with songs finished up the old year and saw in the new in great form. The old doctor was very happy, and sang us several songs. We fetched in the bear dogs, present and prospective, and gave them a taste of punch also, so as to complete our polar family circle. Poor "Jinnie" has not turned up, and I fear there is little chance now of her doing so. No doubt the bear killed her. Both my little bitches have gone—the mothers of all the pups and of our future sledge teams. Poor little "Jinnie" was very fond of me, and seemed never happy unless close to my heels or sitting at my feet. She had become a capital bear dog, and was very keen. I miss her very much, poor little dog.

CHAPTER XXI

A NASTY CLIMB IN THE DARK

January 1st, 1896, Wednesday.—Our second New Years' Day in Franz Josef Land and my third in succession in the Arctic.

The low temperature still continues ; the wind varying between north and east, and the thermometers keeping persistently upon -40° F. below zero. The wind has varied from a light breeze to a moderate gale during this time, and when the wind is at all strong the cold is keenly felt. Strange to say the sky has been overcast and misty all day. This I believe is one of the few recorded instances of a gale of wind with the temperature anywhere near as low as 40° below zero. I hope this may be an unusual occurrence even in this land of surprises, and that the clerk of the weather won't be playing tricks of this kind when we are out sledging in March. Minus forty below zero is quite cool enough when camped out, without a gale of wind to rub it in.

We all went for our usual walk to-day with face guards on.

Heyward got us a very nice dinner—roast pony, plum pudding without raisins, being the chief dishes, and we finished up the evening very pleasantly. Every one did his best to amuse his neighbour, and one and all laughed at the stalest of the stories as good-humouredly as if he had never heard it before. Six men living in a space twelve feet by thirteen feet for over eighteen months

are apt to spin the same yarn more than once. Minimum thermometer registered -47.5° F. below zero.

January 2nd, Thursday.—The thermometers have kept close down upon 40° below zero throughout the day, but there has been less wind than yesterday, and it has been clear and fine.

We all went for our usual walk in the morning and afternoon, and I took the cameras out for time exposures, and tried the telephoto lens upon Bell Island and Cape Gertrude. I have changed the films for fresh exposures about every hour and a half for the "Rapid" films and every two hours for the "Landscape" which are slower.

Heyward had been having a great deal of trouble with the bread and it is terribly heavy. He uses some yeast-cakes in making it. I went into the matter a little and found that by following the printed directions he makes the paste too wet, but that by mixing it as stiff as possible, and by allowing the dough to remain over night above the stove to rise, fair bread can be made. I find one yeast-cake is sufficient for one baking of a day's bread for us.

Heyward has permission to keep "Charlie"—a rather ill-conditioned cur for which he has a temporary affection—in the kitchen during the severe weather. "Charles" had to be removed from the dog-house as the other dogs were trying to eat him, and was tied up outside to save his skin. Heyward, in a way peculiar to him, walks all over this dog, and continuous squawks and howls announce his progress through the kitchen. The dog sometimes tries to escape into the common room, but Heyward immediately lugs him back and the squawks begin afresh. "Charles" is beginning to look dejected.

We are beginning to feel the want of more books

and a better selection of them. With Arctic volumes especially we are very badly provided.

January 7th, Tuesday.—All to-day the wind has been blowing with unexampled force, even for this balmy spot. Having this morning veered round from its easterly direction to north-west it has been blowing in violent gusts even up to force 12 (or hurricane force). The sky has been misty and quite overcast, and the loose snow has been driving fiercely, with a temperature falling as low as 37° below zero at midnight, before which time the gusty character of the storm had settled into a steady storm force (force 11). I watched the Meteorological Office aneroid this afternoon during some of the gusts and the needle vibrated as much as two-tenths (28.40 to 28.60) rising between the gusts and falling irregularly during them.

All but two went for a little short exercise this morning close to the house. I did not insist upon these two going out as I considered there were very rational reasons for remaining indoors.

After lunch I went down on to the floe to remove the two sledges there as I was afraid of all the land-ice being carried away by the wind. Could nowhere find, however, the Russian horse sledge. As Blomkvist had used it last in exercising the pony, I went back for him to aid me in finding it, and to get the masthead lamp, as it was extremely dark. The sledge had vanished, and we could only find a few splinters which tell a tale I am afraid. When on the ice both Blomkvist and I were blown down, he falling on the top of me, during one of the fiercest gusts.

I afterwards went for a little exercise on the pond by the hut for an hour, lying down on the ice when the strong gusts came along to avoid being blown down.

The land-floe, when Blomkvist and I were down there, was creaking ominously, and cracks were forming in every direction. I could dimly see the open water quite close, and nothing but the small grounded bergs evidently were keeping the ice in the bay.

Blomkvist and I afterwards went on to the roof of the stable, holding on tightly all the time, to secure the sledges up there, as they were beginning to come adrift; we also nailed up the door of No. 4 hut with some boarding as it is threatening to go. How these canvas houses have stood is a wonder to me. Nothing but the fact of their being frozen hard down, and being full of heavy stores, in my opinion, has saved them.

I fetched our two bear dogs (the only two now remaining) "Räwing" and "Nimrod," and the little bitch "Gladys," which I gave to Armitage to console him for "Sammie's" loss, into the hut, where I shall keep them until the severity of the weather decreases. At present it isn't fit for an Arctic devil to be out in! After lunch Armitage wrote up the observations, Fisher went on with a sketch, Child finished the paraffin stove, and the doctor worked at a specimen (bird).

Just before the gale began two dogs "Daisy" and "Pongo" were heard yapping at the top of the talus, having gone up and being afraid to venture down. Their barking attracted the young pups which had just been let out of the stable, and they joined them before they could be stopped. It is a dreadful nuisance! They are, I am afraid, having a bad time, but we certainly cannot make an attempt to get them down until the weather is better.

January 8th, Wednesday.—The storm has been blowing all day a full gale (force 10), with fierce gusts in the afternoon of force 11. Overcast and very misty, with

thickly driving snow. The temperature has kept at about 35° below zero throughout the day. The direction of the wind has been N.W. or N.N.W.

I have kept all the dogs that have had their liberty outside the dog-house inside our hut to-day, and we have had a pretty full house what with men and dogs.

No one cared about venturing out for the usual exercise, and I did not press the point, as the weather is truly diabolical. I went out, however, for an hour's walk on the pond, going backwards and forwards, with a face-guard on; and so got a mouthful of fresh air—very fresh indeed it was too! Our common-room smells a little "doggy," and what with men, dogs, bear's blubber, and paraffin, the atmosphere is not as nice as it might be; however, this condition of things will soon be altered when the gale moderates.

January 10th, Friday.—The severe weather still continues, the wind, generally very variable in direction, blowing from a moderate to a fresh gale, with fierce gusts up to force 10. The temperature keeps in the neighbourhood of 37° F. below zero most of the day. None of the others cared about facing such weather for exercise. I went for my usual walk after lunch, but reduced it to an hour's tramp up and down on the pond. In the evening they all played whist.

At 11 P.M. the doctor went outside the hut for a moment, and returned joyfully reporting that the gale was over; and Child came in a moment after, and told me he could hear a dog yapping at the top of the talus still. As I did not wish to lose a moment after the weather rendered it possible to attempt a rescue of the poor beasts, I called Blomkvist, as being the best and pluckiest climber, to come with me and try if we could get them down.

We had not gone a hundred yards from the hut before the wind got up again, blowing a strong wind from the north-west, bringing a thick mist with it; and as the temperature had fallen to 39° below zero, the cold fairly blew through us. Still I did not wish to turn back after starting, so on we went.

By means of our ice-spikes and ice-axes we managed, after a two hours' climb, to get above the lower tier of rocks, a height of 600 feet, by cutting steps in the hard, icy snow. The darkness, thick mist, and an incline of about 45° , to say nothing of the cold and wind, rendered our climb extremely nasty, as one slip meant a smash to the bottom. And I could not help feeling that I was a fool to have taken on the risk for the sake of a dog or possibly two dogs, and especially for allowing Blomkvist to risk himself also; but the piteous yelps led us on. We soon found that the wretched animals had chosen about the worst spot on the cape they could find on which to perch themselves, which was up an iced gully running up through the rocks towards the ice-cap on the summit, which is 1400 feet above the sea. There at the top of this gully we could tell by their howls they sat. As we got towards the top a second dog began to yelp, so that two out of the five were still alive. The smaller pups were doubtless dead, either from exposure or have been devoured by their larger companions. When about sixty feet from the very top we found that it was utterly impossible to go a foot higher. Even the hard snow ceased, and hard compact ice took its place, and the incline increased to an angle of about 60° . Our ice-spikes would not penetrate, and with our ice-axes we could in the darkness only knock irregular splinters out, making very uncertain steps. It meant a tolerably certain fall if we tried to go a foot

higher. How the dogs got there at all is a mystery, and I can only conclude that there was a layer then of soft snow which gave foothold, and which the gale has blown away since. There may be an easier way up, which the mist and darkness prevented us seeing.

Very reluctantly we began to descend, a more difficult matter by far than ascending, and which took us nearly three hours during that winter's night to accomplish. We felt like flies on a window-pane, and below us was one black abyss, which a slip would hurl us into. Blomkvist got his right hand badly frozen at the fingers, and also his nose and cheek. I got both feet severely frost-bitten, and also my right hand. My feet got caught, I think, owing to the tight straps which held the ice-spikes on, checking circulation, and also doubtless the steel plate of the latter helped to communicate the cold.

My right hand was touched up from grasping the steel of the ice-axe, even through two pairs of thick fur mitts.

I walked about outside the hut for a long time on finding my feet frozen, to get them thawed out somewhat before coming into the warmth. They were mightily unpleasant when the thawing process began, and I could not turn into my blankets until after 6 A.M., owing to the pain. The doctor, when he turned out for his watch, put some bandages on steeped in lead and opium lotion, which helped to ease them. Fortunately, my circulation and vitality are good, or the consequences would have been serious.

Blomkvist came off better than I did, and his hand soon ceased to pain him. The cold at the hut was 39° below zero, and doubtless at an altitude of at least six hundred feet higher it was somewhat more ; and together with the strong wind and our necessarily slow movements,

it is hardly surprising that frost-bites did occur. I wish we could have got the dogs, though!

January 12th, Sunday.—I took a double watch during the night from 10 P.M. of January 11th to 4 A.M. of the morning following, as Fisher does not look well, and I think an undisturbed night's sleep will do him good.

Both the bear dogs and "Charley" and "Gladys" have been inmates of the house both night and day during the very severe weather. To-day they have been turned out to attend to their regular vocations of looking for bears.

This evening, at 11 P.M., a whine was heard outside the hut; and on Fisher going out to ascertain what dog it belonged to, found, to our surprise and relief, that "Daisy" and "Pongo" had at last mustered up courage and had come down from their perch at the top of the talus. If they had once attempted to do so they could not fail to come, as they would slide down pretty smartly the greater part of the way, *nolens volens*.

They look very thin and weak, but very lively, and ate ravenously of some tinned beef which I gave them. I only portioned out about one pound each to start with, although I believe they would have eaten ten times the quantity; but reserved further feeding for an hour or two.

This is the tenth day they have been without food and exposed to some of the most fiendish weather, I should say, on record. They are two Samoyad pups from "Jinnie's" litter, and under a year old. The vitality of these northern dogs appears to be marvellous.

Every one has been complaining of shortness of breath since the winter began. I noticed the same thing last winter myself. I conclude that the cold air causes a constriction or spasm of the larynx. I find that in

chasing a bear I cannot run far without slackening down my pace. I don't think I am in the least anæmic, which would account for it.

To-day I have three large blisters on three of my toes on my right foot, and the left appears likely to follow their lead, as the result of frost-bites. The lost sledge has been found driven half-way up the very steep slope of a berg, and had apparently run up and down it as the gusts came and passed. It is much damaged, but can be repaired.

January 13th, Monday.—The weather has been an improvement on what we have experienced recently. The wind, chiefly north-east, has varied from calm to a strong breeze; and the temperature has generally been standing at 40° below zero, with the mercury frozen, as it has almost constantly been for the last fortnight.

We find it difficult to tell by looking at a mercurial thermometer whether it is frozen or not when the cold is in the neighbourhood of its freezing-point. I instructed Armitage to place a small quantity of mercury in two phials in the thermometer screen, to enable us at once to see in what condition the thermometers are. At midnight the temperature had risen by the large mercurial thermometer to 36° below zero, and by the meteorological office spirit thermometer to $38\frac{1}{2}^{\circ}$ below zero, having at 10 P.M. registered respectively 39° and 40° . In one phial the mercury was quite solid, and in the other a bead of liquid mercury ran from the solid mass.

At 1.30 A.M. "Daisy" gave birth to three pups, one being dead. This birth is premature, and caused probably by her late hardships and by her slide down the talus last night.

January 14th, Tuesday.—All went for the usual walk

to-day. A definite light is now perceptible at noon from the returning sun.

After lunch Armitage wrote up observations and I helped him to take a stellar observation for time, as the weather was calm and clear.

One of "Daisy's" pups died last night and as she has no milk, Child has become the foster mother of the remaining one and is trying to feed it.

January 15th, Wednesday.—The wind to-day has been from a calm to a gentle breeze (chiefly north-easterly) and the temperature about 32° below zero.

A little before 8 A.M. I was awakened by "Nimrod" in his language yelling "bear!!!"

Heyward and Armitage, who had just turned out, came in to tell me that "Räwing" was barking on the floe, so I had "Nimrod" slipped to give him a hand. Armitage and I started off in a few minutes with our rifles, across the rough ice opposite the tide-pole, after I had slipped on a coat and breeches over my pyjamas. We, however, soon found that the bear, who was roaring loudly and evidently much annoyed, was out of reach on the thin bay ice beyond the old floe, which was in much too unsafe a condition, having only been frozen since yesterday, for us to venture upon in the darkness. We tried to call the dogs off, but failing, and getting half frozen waiting about we returned to the hut. I did not think there was a hundred to one chance of our getting a shot at the bear, but before I turned into my blankets again (I had been up till 3 A.M.) I told Blomkvist and Heyward to keep a look out, for, as it was evident that it was much enraged, I considered it possible that it might give chase to the dogs, which in beating a retreat would lead it towards the hut. An hour or so afterwards Heyward came to tell me that two bears were

on the floe close to the slope by No. 1 hut with the dogs entertaining them. I hurriedly rushed into a coat and breeches, and accompanied by Armitage started off, to find the bears among some hummocky ice about three hundred yards on the floe to the south, engaged in making rushes at the two dogs and roaring loudly. We got round them to cut off their retreat to the water, and on approaching to within about ten yards we opened fire; I knocked over the mother, and Armitage in fine form bowled over a cub about half grown, which tried to make a dash for it. We were examining the latter, when suddenly another half-grown cub appeared, which I promptly shot through the head, making a bag of three bears. We then returned jubilantly to the hut and got a sledge, and the whole party lent a hand to drag them to the foot of the ice-slope of the cliff up which we hauled them. Before removing them from the ice Child and I photographed them, on the spot they were killed, with a magnesium light as an experiment. I had one cub dragged into the hut and weighed. It scaled 234 lbs. (16 stone 10 lbs.)

The doctor, Armitage, Blomkvist and I spent the rest of the day until after midnight in skinning and cutting up the bears in No. 2 hut. The cubs, big as they were, were still sucking the mother, and all three were in fair condition. In the stomachs were the remains of semi-digested seal, and in addition in the mother's, two small scraps of printed paper, evidently Norwegian or a similar language.

As we could not in any way account for this we were all inclined to think that the bear had picked it up in the neighbourhood of some Norwegian ship up in these parts, and our thoughts naturally turned to Nansen; and speculation was rife. We were talking of the warm

welcome we would give him if by some wonderful chance the *Fram* should drift into our neighbourhood. At last, however, Heyward identified one of the small scraps of paper as being identical with a portion of a label on our Danish butter tins—about the only piece of printing resembling Norwegian we have here I think. How the old lady came by it I cannot say, but it is remarkable

A KILL

that her selection should have been what it was; especially the one portion of the label she did choose, which particularly tended to perplex us.

We had a glass of port each after we finished the skinning to celebrate such a red letter day. The two bear dogs "Nimrod" and "Räwing" were fetched into the hut and treated to luxuries. The former had had a near shave in the hunt and got his left front paw badly bitten. He is now limping about with it bandaged up, and quite looks his part of the wounded hero.

They did wonderfully well to tackle three bears at once so successfully.

January 16th, Thursday.—Blowing from south-east by east with thick snow increasing in force to a strong gale; very unpleasant.

We all went for our usual walk. After lunch the doctor, Blomkvist and I, started upon the bears to remove the blubber in No. 2 hut. By dinner-time they had become so hard frozen that we had to cease work and bring the skins back into the hut to thaw out by the stove during the night.

Most of us have a slight touch of cold in the head, with sneezing to-night, the first I think since arriving here. Heyward a day or two ago opened some fearfully evil-smelling tinned beef-steak which made the house uninhabitable for hours with its awful odours, and spattered himself all over with it. The proximity of Heyward is avoided just now. The doctor has a theory that the influenza germs may have arisen from the putrid meat germs. Our affection however only lasted an hour or two.

January 17th, Friday.—Between 10 P.M. of January 16th and 2 A.M. of to-day, the thermometer rose 17° with a strong gale from the east with snow, rising from -19° to -2° below zero and the maximum marked as high as $+6^{\circ}$. This indicates I conclude a considerable extent of open water out in that direction, causing a wave of warm air.

During Fisher's watch about 5 A.M. I was awakened by "Nimrod" frantically barking, and as I supposed that there was a bear near I turned out, but soon found that the cause of the disturbance, was a row between "Räwing," "Charlie," and "Pongo," and that "Nimrod" was applauding the combatants.

"I WENT UP WITHIN EIGHT YARDS OF HIM AND KILLED HIM WITH ONE SHOT THROUGH
THE HEAD FROM MY EXPRESS RIFLE"
(Photographed by magnesium ribbon)

About 10 A.M. I was again aroused by Heyward coming to tell me that there was a large bear by No. 4 hut. I put a coat over my pyjamas and started out in my slippers followed by Armitage and Blomkvist. Found "Mr. Bear" behind the stable standing at bay with "Nimrod," who had been slipped, and "Räwing" barking around him. I went up to within eight yards of him and killed him with one shot through the head from my .450 express rifle. We were making preparations to photograph the bear where he lay, with the magnesium light, when "Räwing" was heard barking upon the floe, we concluded at another bear, and "Nimrod" was slipped again to help him. Armitage and I started off, and I gave Heyward and Child permission to come too, as I did not care very much whether we got this one or not, having meat in the larder and four skins to clean on our hands already. I sent them out east and west to approach the bear from opposite directions. Child however wandered off west somewhere in the direction of Mabel Island, and placed himself unfortunately completely out of the running; Heyward, I discovered cruising about over some thin bay ice in blissful ignorance that it was far too weak to venture upon with safety. After going about a mile we found the two dogs barking at a walrus on the ice, and as we could not approach it owing to the ice there having been frozen only a few hours and too thin to bear us, we tried to call the dogs off and returned to our photography. We then sledged the bear into No. 2 hut where we again photographed him, as he was a huge beast. It gave us a great deal of trouble to move him about.

I was occupied till midnight skinning him, Fisher holding a light for me. The doctor and Blomkvist went on getting the blubber off the skin of one of

the cubs shot on Wednesday. After leaving off work we removed all the skins to the hut to prevent their being frozen during the night. Bear skins and blubber are rather odoriferous companions and do not add to the attractions of our quarters.

The bear measured on the body: Length along belly, 7 ft. $11\frac{1}{4}$ in. Length along back, 8 ft. 2 in. Girth of chest, 6 ft. $5\frac{1}{2}$ in. Girth of belly, 6 ft. $7\frac{1}{4}$ in. Weight of brain, 15 ozs.

He was fairly fat, and has evidently been able to get plenty of food during the winter. The remains of a seal were found in his stomach.

A very fine aurora occurred at 8 P.M., W.S.W., shooting out thick bands and streamers across the sky to E.N.E., with fringes of bright green to deep rose, recurring, scintillating, and darting rapidly. A corona in the zenith. It started at about 6° above the horizon. The colours were more intense than any we have yet seen and it gave far more light, brightening up the whole country to the horizon.

Magnet V of the magnetometer vibrated considerably and rapidly. The deep rose tint at the edge of the streamers often became changed into a purple. Nearly the whole aurora would occasionally disappear and then in a few minutes reappear with great brilliancy. It lasted about an hour.

The aurora borealis vibrates over the vast cupola of the heavens in ever-changing colours, rapidly altering in tint from yellow to green, rose and purple. Now it opens out and again contracts in endless change, breaking into serpentine bands, which fold up, and again unfold, and dart rapidly from the horizon to the zenith, lighting up the whole landscape with its soft rays.

"WHERE WE AGAIN PHOTOGRAPHED HIM, AS HE WAS A HUGE BEAST"

The whole sky is a blaze of glory, when suddenly these spirit fires fade away and only a few faintly luminous tracks of its former magnificence remain. In a few moments its scintillating streamers flash forth again, and the kaleidoscopic maze of light is repeated, yet ever different. Not a sound is heard and all is breathless stillness as this mystic dance of departed spirits continues.*

January 21st, Tuesday.—All went for the usual walk this morning. The doctor and Blomkvist finished the fourth bear skin and had salted it down by dinner-time. On comparing the weights of the brains recently shot, I find that the huge he-bear shot on January 17th is three ounces short of a similar but somewhat smaller bear shot on December 7th; two ounces short of the she-bear shot on January 15th; and one and a quarter ounces of No. 2 cub killed at the same date. He must have been a bit of an idiot!

After lunch Armitage wrote up the meteorological observations, Child finished making the second rib of the tent, Fisher was engaged in making a woollen mask for his face for high wind and low temperature. I partly cleared out my "room" (size about seven feet by four, chiefly filled with guns and books), which is in a fearfully damp condition from condensation, and wiped and dried the walls and a number of articles. There is a perfect glacier of ice formed on the outside wall.

Armitage, the doctor, Fisher and Child, played whist after dinner.

January 23rd, Thursday.—A fresh to strong easterly gale has been blowing all day with very thick snow falling and driving. Part of the time it fell and drove

* The Esquimaux believe the aurora borealis to be the souls of their departed at play.

thicker than at any time this winter or autumn, and when standing at the edge of the pond fifteen yards from the hut, the hut itself and even the lighted-up windows were perfectly invisible. All went for a short walk before lunch in spite of the weather.

After lunch Armitage wrote up the observations; Child started to repair my .450 rifle, as the stock has given where he glued it some time ago; the doctor repaired his boots; Fisher mounted the traced map upon linen (he is very neat in all he does); I did some odd jobs and then washed some clothes, getting level again with them.

Blomkvist looks rather pale and thin and has lost his appetite. The doctor gave him some morphia this morning and some sulphonal to-night to induce sleep. I feel a bit anxious about him.

January 24th, Friday.—The barometers are now very low, and at 10 P.M. the meteorological office aneroid registered as low as 28.34. The George's showed 28.22 and the marine barometer 28.512. The wind has been variable both in direction and force; at 1 P.M. was blowing a strong gale from north-north-east, and at 4 P.M. a fresh wind with fierce gusts from north-north-west at force 10 to 11, with driving snow. We all went for the usual morning exercise.

January 27th, Monday.—Blowing hard all day; occasionally steady with a force varying from a full gale to a storm, at other times in fierce continuous gusts up to storm force and occasionally approaching in violence that of a hurricane. Overcast and misty most of the day with a temperature 25° below zero.

The violence of the wind worked adrift the sledges that had been lashed down to the roof of the stable and smashed one in half (fortunately this was a sprung 13 ft.

sledge). Before further damage was done the rest were removed to the enclosure.

Part of the wall, consisting of dog-biscuit casks with cases of spirit on the top of them, which had firmly withstood all previous gales both this year and last, was blown down, as was also the wall of tinned meat cases between the hut and the stable.

All went for the usual walk about noon with faces well protected when it moderated for a time to a fresh gale. I, however, took my exercise later in the day, between four and 6 P.M., when I had the greatest difficulty in keeping my feet at all, and once on the pond was blown down by a fierce gust and driven along on the ice for five or six yards. Waigatz Island and the Yugor Straits country are reported to be very stormy during the winter. I can quite believe it if they get even the fag-end of our north or north-west gales.

After lunch Armitage wrote up the meteorological observations; Fisher washed some clothes for himself; Child went on with the tent; the doctor stopped a tooth for me which is showing signs of going, also one for Armitage and another for Fisher. He has also been overhauling the dogs' harness. "Räwing" gnawed a large hole in our outer door with the object of making comfortable lodgings for himself inside our hut. As this is the third door he has similarly treated, his enterprise was to-day rewarded with a tanning to deter him from further destructiveness. He looked at me afterwards as if he thought me a very odd person, but regretted that my eccentricity should take such an unpleasant form. He didn't care twopence for it.

The barometers have been rising steadily during the last three days in spite of the delightful weather we have been enjoying. The aneroid (meteorological

office) vibrated four-tenths this afternoon during the gusts.

January 28th, Tuesday.—A great improvement in the weather to-day; the wind having gone down in strength, varying from light breezes to a strong wind, variable in direction but chiefly north-westerly. It has been overcast and misty a great part of the day. Fine weather seems reluctant to come to us, however, and the barometers are falling again to-night.

A very large expanse of open water was visible at noon to-day and no ice could be seen beyond the land floe, either south, south-east, south-west, or west, the tide, however, brought up ice with it from these directions towards midnight. It certainly looks as if it would be possible to navigate a ship to the south even at this time of the year. There was a bright orange glow to the south at noon. All hands were set to build up the walls blown down during the last gale, and then every one went for the usual walk.

“Gladys” gave birth to five pups this morning. This will be a great help and will replace some of the murdered ones.

January 29th, Wednesday.—Between 6 and 8 P.M., long arched lines of cirro-stratus clouds extended over the zenith focusing at S.S.E. and N.N.W. A similar occurrence happened on March 23rd, 1895. The weather still kept fair with N.N.W. breezes chiefly, and clear weather until 10 P.M. when the wind became easterly and sky overcast.

“Räwing” went with me for a walk, and when out found a he-walrus lying on the ice beyond “Bear Berg.” His barking brought me up to the spot, and taking a seat on a hummock I watched the performance between the walrus and the dog at about six yards distance. The

walrus lay apparently insensible to the dog's presence for a time, and appeared to treat him with severe contempt, although "Räwing" was shouting his loudest within three feet of his nose ; when suddenly raising himself as if exasperated at the dog's noise and impudence, he would make one or two vicious digs at him with his tusks, which the dog easily dodged and seemed to think great fun, and then lapsed again into apparent indifference. This went on for fifteen or twenty minutes, when, as I was getting cool and saw no variety in the entertainment, I called the dog off. My calls evidently alarmed the walrus, and he quietly slid tail foremost into his hole, as quietly as an alligator takes the water, and disappeared. Walruses, as a rule, but not always, lie with their back flippers over the edge of their hole into which they slide backwards on taking alarm.

He did not mind in the least the dog's vehement barking, but directly he heard a human voice he became alarmed.

January 31st, Friday.—The easterly winds still continue blowing from a moderate to a fresh breeze most of the day, and early this morning the temperature began to fall, and it stands 21° below zero to-night, indicating that most of the sea east of us is probably filled up with ice. No open water anywhere can now be seen.

After lunch Armitage at my request made out a list of the prevailing winds and forces during last summer and autumn ; as they (north-north-west and north-west and west) no doubt had very much to do with the western portion of the Barents Sea being so free of ice up to August 12 ; and probably contrary winds beginning to blow at the beginning of August had much to do with this portion of the sea being filled up with ice after the first fortnight of August. I have asked Armitage to get

out statistics for me to see if my opinion is backed by figures. I have not yet had time to classify the figures he has given me.

Fisher made botanical notes from various appendices, the doctor washed his clothes, Child did several odd jobs, I made a list of provisions and equipments with weights required for our spring sledging.

About 6 P.M. Blomkvist came in to tell me that "Rags" and "Pincher" had contrived to get at "Punch" in the dog house, and had badly wounded him. I went out and examined him, and carried him into the hut where we found that he had a wound in the abdomen showing a broken floating-rib with a part of the liver protruding through it, and outside the wound.

The doctor sewed it up and I gave him an injection of alcohol, as the dog was suffering much from shock. Later on he had two injections of one-fourth of a grain of morphia sulphate, as he seemed in much pain. He then went off to sleep. He may possibly get well, although the doctor says a human being could not. He is lodged in the hut until he either dies or has recovered.

February 1st, Saturday.—Poor "Punch" died during the early morning.

Overcast and misty all day with E.S.E. and easterly winds increasing in force—with a rapidly falling barometer—to a moderate gale towards midnight, with falling and driving snow.

All went for the usual walk.

After lunch Armitage at my request got out a further table of the wind and wind forces and directions for last summer. I think when I have got these fully arranged it will enable me to judge of the probable state of the sea to the east or west of us another year by com-

paring a synopsis of that year or summer with the one drawn out.

At 7.20 P.M. barking was heard outside the hut, and suspecting a bear, Armitage and I took our rifles and away we went. It was very dark indeed, being quite overcast, very misty and snow falling, and snow was also driving before a fresh breeze. Near No. 1 hut we found "Räwing" barking at a bear that was springing about after him and making rushes. We approached within five yards of him before we could quite make out whether he was a cow, a donkey, or a bear, it was so dark, and even at so short a distance I could not make out his head distinctly. At this range we both fired, looking first of all to see that the dog was out of the line of fire, as we always do, and the bear rolled over, but in about five seconds recovered himself and made off towards the floe. I abstained from giving him the contents of the left-hand barrel of my rifle as I could not make out "Räwing's" whereabouts, and was fearful of shooting the dog. Missing his barking I looked around and then discovered that a sad accident had occurred; a bullet from either mine or Armitage's rifle having passed through the bear had struck the poor dog in the chest, and he lay writhing on the ground. Armitage was using the Government .303 rifle, and I my double-barrelled .450 Express. The nature and small size of the wound makes us think that it has been inflicted by the small .303 bullet. Still if it is so, no one is in any way to blame, and it is a wonder that such an accident has not occurred before, with dogs springing and dodging around in the dark, and rifles of such tremendous penetrative power as the Lee-Metford being used.

I picked the poor old chap up and carried him into the hut, and did not trouble any more about the bear,

and the doctor under chloroform endeavoured to trace the course, and if possible extract the bullet. The passage is so small however, that we can only ascertain that it has apparently gone into the cavity of the chest, although there is no bleeding whatever at the mouth or nose, or any other symptoms to indicate that the heart or lungs are injured. He appears to be suffering from a certain amount of shock, but it does not strike me as being excessive. There is no doubt whatever of the bullet being a spent one, through passing through the bear's body, for at that near range either of our rifles would have put a bullet through the bodies of three or four dogs ; and in the case of " Råwing," the bullet has only penetrated a few inches, as there is no exit wound. It has splintered the thin part of the scapula, but has met with no hard bone. He lost very little blood. We bandaged him up, and as the poor old boy seemed in much pain, we gave him an injection, first of one-eighth and followed with one-fourth of a grain of morphia sulphate, as the first did not quieten him sufficiently. He has now been sleeping for five hours, and is breathing quietly and regularly. I have hopes that he may recover. He is a fine plucky bear-dog, and it would be very sad if he should end his life in such a manner. He has given us many a good hunt, and is a good servant to us.

Armitage has exchanged his Tweedie bulletted cartridges for some soft-nosed ones, which are less likely to go right through a bear's body. I too shall use expanding bullets to reduce the risk of similar accidents in future. I fear it is a case of locking the stable after the horse has gone. I went out at midnight to see if the bear is lying at the foot of the steep slope on the edge of the floe ; but the gale put the lamp out, and the falling

and driving snow and darkness rendered it impossible to see anything. I had previously sent Child with my rifle a few minutes after I fired the shot to look for him there while I attended to "Räwing," but he could see no signs of him, so I conclude he has got away, but he must be very badly wounded.*

February 2nd, Sunday.—The gale blew hard (force eight to nine) all morning up to noon with dense mist and thick snow from E.S.E. and east by south. It then fell to a fresh breeze, and became variable in direction with mist and snow. "Räwing" is apparently going on well, and the doctor has come to the conclusion that the bullet has not entered the chest, as he shows no symptoms of this having happened. He advises cutting down upon the scapula which has a small round hole in it, through which the bullet has passed, and endeavour to extract it. This we did under chloroform after dinner, but find that it has apparently either passed forward underneath to the chest muscles, or has entered the anterior mediastinum through the costal cartilages. We can feel no broken rib. It is probably lodged under the muscles in front of the vertebræ. Nothing further can be done in the way of exploring for it, as the passage is so small that the bullet cannot be felt, and its whereabouts can only be surmised. It will either cause an abscess which will point out its location, or become encysted, when it will give no further trouble. The doctor thinks "Räwing" will probably recover. He removed several pieces of bone (splinters of the hole in the scapula) and hair from the wound, and put in a drainage tube. He gave him

* This bear was found at the bottom of the steep slope on May 25th (three and a half months later) when the snow melted, a few yards from where I had fired at him. He had been snowed under in a few minutes.

an injection of morphia after the operation, as he seemed uneasy, and he is now sleeping quietly.

All went for the usual walk, and amused and occupied themselves in any way they felt inclined, to-day being Sunday.

February 4th, Tuesday.—We have been taking off the outside windows during the last two days and removing the coating of snowy ice on them, so as to admit into the house what twilight there is about noon. Light is a highly valued article in these latitudes, which requires a winter or two here to properly appreciate.

After lunch Armitage wrote up the meteorological observations; Child went on with the tent; the doctor dressed "Räwing's" wound and repaired the dog-harness; Fisher did some work for himself; I worked out the synopsis Armitage had been doing for me of the winds, &c. While so engaged "Räwing," who was lying by me on his bedding, began to gasp (he had seemed more comfortable to-day and looked promising), and we could at once see that he was dying. The doctor injected alcohol, but with no avail, and he expired suddenly at 7.30 P.M. The doctor made a post-mortem to ascertain if possible the cause of his sudden collapse and the position of the bullet. On examination we found that it had passed through the thin upper portion of the left scapula, had grazed a transverse portion of vertebræ, had passed behind the trachea and œsophagus, and then lodged in the muscles of the under portion of the right scapula. It turned out to be about half of a .450 bullet. After passing through the body of the bear, which had mushroomed it nearly flat, it had evidently by the marks upon it hit a stone and struck "Räwing" after the ricochet, had penetrated his body edgewise, this accounting for the small wound, otherwise it must

have made a much larger one. The rest of the bullet either remained behind, and the bear has it with him, or it flew off somewhere else after leaving his body.

There was nothing to account for the poor dog's sudden death, and the doctor thinks there was nothing apparently to prevent his recovery in time. He can only suppose that it was due to embolism either in the heart or brain. He was quite right in his diagnosis, with the exception that the bullet was found in the posterior mediastinum instead of in the anterior. There was a little effusion into the pericardium, but not much. No important structures at all were injured. The bullet was much "mushroomed" in its passage through the bear, and after leaving it had, as was evident by the marks upon it, hit a stone, and had then glanced off and struck the dog, entering with the flat edge forwards, being now like a shilling, and thus accounting for the small wound it made.

We have placed the body in a box for burial, and I have erected a cairn of stones with a staff over it, which covers his corpse, beneath the flagstaff, where, poor old fellow, he has often hunted bears in life.

May he and I meet again to continue our sport together in the next world, and may we bag many a good bear yet. A keener sportsman I don't wish to meet. Poor old chap, we shall find it difficult to replace him! He was a great favourite, and I feel very sorry about it. Quite a gloom is cast over our small party by his untimely death. An old and valued friend has left us, and it is with a feeling of deep sadness we remember that we shall never hear his deep bark in pursuit of a bear away over the great ice-floes in the silence of the Polar night, or see his friendly old face again.

February 5th, Wednesday.—The wind has been

chiefly north-east to-day and blowing from a strong breeze to a moderate gale with driving snow. This is a climate!

All went for the usual walk. The doctor is very much troubled indeed with sleeplessness, and all suffer more or less from it. It is a fearful nuisance. Most of the party look rather pale and the dark time has had an ill effect upon all more or less. I keep pretty fit, but get occasional mild attacks of biliousness, due no doubt to

"RAWING'S" GRAVE

the dormouse kind of life we must necessarily lead during the winter. Irritability is occasionally noticeable for a short time, but is well kept under. Our doctor can offer no explanation as to how the long darkness produces sleeplessness, or why it should be more pronounced this winter than last.

February 8th, Saturday.—I am having loom and pony meat fried in lard to take sledging. I find it loses about 45 per cent. of its weight even after the addition of fat. It will save fuel when out, and time and trouble in cooking. We all cut up the meat into small pieces suitable for frying and put them into the observatory to freeze afterwards.

After dinner Armitage and I took star observations for time, to get a good rate for the two watches we intend to use sledging. The doctor is carrying one about with him to give it a travelling rate, as it has been lying in the chronometer case all the winter.

February 11th, Tuesday.—A fox was seen moving about on the floe about three-quarters of a mile off, near "Bear Berg." Even through the telescope he appeared very dark in colour all over his body, nothing about him approaching white, the usual winter coat of the Arctic fox.

I sent Armitage and Blomkvist out with shot guns to try and cut him off, but with the usual wariness he doubled off east, and probably made for Cape Gertrude. I shall try and construct a trap of blocks of ice to-morrow to catch him, as I think it is very doubtful if we shall ever get within shot of him.

We took out a team of dogs in a sledge round the "Row" for exercise before lunch. All went the usual walk. After lunch Armitage wrote up the observations, Fisher cut up bear meat for our sledging, Child went on with the tent. The doctor made a blanket coat for "Carlo" to wear sledging. I finished the bear's paws.

I examined a large berg to-day just off Flagstaff Point and noticed that one surface is cut into deep parallel ridges, all running in the same direction, throughout its whole extent. These ridges are about three feet deep. I conclude that this was once part of the surface of the glacier down which streams of water poured in the summer for several years. It is, however, difficult to account for their running so exactly parallel with each other, without once meeting. It looks as if some huge plough had scored the surface, with great precision and regularity.

February 13th, Thursday.—Armitage and the doctor took a shovel and made a place in the snow near Castle Rock to hide in, and I intend to try and get a fox by using our “burgie” as a decoy to bring him within gun shot. Armitage and I walked out to “Bear Berg” and climbed up it. We there saw “Nimrod,” who had escaped from Fisher, walrus hunting on the bay ice. After a good deal of trouble we got him away, but when near the hut our attention was for a moment taken away, he rushed off again, and at midnight had not returned. As the spring tides aided by a northerly breeze moved the bay ice off from the edge of the land floe about 7 P.M. he is now probably cut off by open water. He may, however, get back if the returning tide brings back the ice. The worst of both the Samoyad and Ostiak dogs is that they are very intractable and difficult to teach anything, due I suppose to deficiency of brains, being little removed from the wolf. They can stand very great privations, but they are stupid and intractable. They pay no attention whatever to being called, unless they think you are within striking distance of them which looks like their being more knaves than fools. Correction they forget ten minutes afterwards, and in many cases appear unable to understand what it is administered for.

All the Expedition went out with two dog teams after breakfast. I am trying to teach the dogs to follow the sledge in front instead of a man leading. For when sledging in March there will only be three of us, and I think two teams of eight dogs each, will do more work than one team of sixteen dogs. They shaped fairly well to-day, and with further practice will, I think, work all right.

February 15th, Saturday.—Sleeplessness still causes

more or less trouble to every one, and the doctor is affected more than any one, and looks very unwell as the result. The night-watches for taking meteorological observations have in conjunction with insomnia proved rather a hardship, as some of the party frequently are unable to get to sleep before they are called to take their night-watches, and after turning in again have remained awake all night. The little sulphonal that came has proved very useful in inducing sleep. I wish we had more of it. The immediate cause of this sleeplessness is over activity of the brain—the thoughts rapidly fly from one subject to another in spite of efforts to check them. This may go on for hours until at last the will gradually overcomes this, and one sinks into an uneasy slumber from which the smallest noise awakens. I, for my part, have never been troubled with sleeplessness in my life before, but could always sleep like a rock.

February 19th, Wednesday.—We took out the pony and sledge with the dog teams to practise them together, and used spirit cases to weigh the sledges. I mean to try one team of sixteen dogs, instead of dividing them, to-morrow, if the day is fine, to see if they will pull the same weight as the two teams of eight each. I find that in rough ice it is unsafe to fasten the central trace of the dog team behind to the horse sledge in front, as the pony and dogs won't pull in unison, and they (the dogs) won't follow at all without it. I am afraid the dog teams will require more than two men to manage them well, but I cannot carry food, &c., for another man, and I must try and get the sixteen dogs to work together in one team.

February 23rd, Sunday.—The sun rose to-day and the long polar night is at an end at last ; which every one is very glad of. How we welcome the light ! To-day,

however, the sky was overcast and we did not actually see the return of our friend. The wind and tide had cleared off all the ice during the night, which recently had been driven in, and there is now open water again running east and west off the old land-floe.

All went for the usual walk at noon to-day. I have been working all day at the preparations for sledging—cutting up bacon into slices to freeze, and weighing out food, &c. I let the others amuse themselves in any way they thought proper. They played whist after dinner—a very favourite evening's amusement.

February 24th, Monday.—It being comparatively fine in the morning, and no snow driving, I took advantage of it to set Armitage, Fisher, the doctor, and Child to turn out and re-arrange No. 1 canvas hut, which had got into a state of confusion. I cleared out the observatory, swept out the snow which had driven in through small chinks, and went through the sledging provisions, which I am keeping there.

The others, after finishing No. 1, went for a walk east. I walked out on the floe to the edge of the open water. Saw many walruses playing about and two dovebies (the first birds of any kind seen this year.) They were not quite white, although in winter plumage, but had white marking around the neck and on other parts of the body, but were too far distant for me to make out distinctly. I went back to the hut for a gun, as I wished to obtain them as specimens; and gave directions to Blomkvist, Armitage, and the doctor, to follow me with the twelve-foot Norwegian boat. On my return to the floe edge, however, they had cleared out, although I saw one of them flying at a distance.

After lunch Armitage went on preparing his gear for sledging, the doctor went on with the boat, Child

worked at the tent, Fisher cut up bear's meat, I weighed out and packed up provisions and went on with the preparations for sledging. About 4 P.M. the wind got into the E.S.E. and afterwards into the south-east, with mist and snow, and by 10 P.M. it was blowing a gale.

February 25th, Tuesday.—After breakfast Fisher, Armitage, and Child dug the sledges out of the drift in the enclosure, and placed the broken or damaged ones on the top of the stable and lashed them down.

At noon all the party, except the doctor and I, went for a walk east. I dug the twelve-foot boat out of the drift, and placed it near the hut and covered it in. Tremendous drifts have formed during the night, far worse than any before this winter. We saw the sun for the first time this morning, as the horizon to the south was fairly clear of clouds. All the water space of yesterday is now filled with broken-up light ice, chiefly bay ice. It looks as if there is very little ice to the south of us, judging by the rapidity with which all the ice disappears out of sight with an off-shore wind, and then with a south-east wind or the incoming tide returns. The wind has been chiefly north-east to-day, from 1 to 4 in force, and the temperature as high as $+22^{\circ}$ —very unsatisfactory for sledging, as this is far too warm. A great part of the day it has been overcast and misty.

February 26th, Wednesday.—Heyward last night trod upon a portion of a packing-case with nails in it, and one ran into his foot. He has been poulticing it all day, and the poor chap is in a good deal of pain.

The same extraordinarily mild weather continues. Part of the day it has been blowing from a gentle to a moderate breeze from north-east and from north-west

without a fall of temperature. Such weather continuing so long at this time of the year in this latitude is, I should say, previously unheard of. It is the kind of weather one would expect to meet with in the Shetland Islands. Max., $+30.5^{\circ}$; Min., $+15.5^{\circ}$.

At 8 P.M., with light airs from west by north at our hut, there was a loud rushing sound among the cliffs of Cape Flora, apparently caused by a strong wind at a higher altitude than our hut.

Heyward came in to tell me this morning that either an ivory gull or a "burgie" was flying over the flagstaff. I went out with a gun, but the bird had disappeared. A large flock of rotches was seen flying at a distance over the water space beyond the land floe, now filled up with broken-up ice. Fine hail, thickly coated with snow, fell this morning. It was about the size of B.B. shot. (Temperature at the time $+24^{\circ}$.)

We were busy all the morning pushing on our preparations for sledging. After lunch we tried the dog snow-shoes on "Nimrod," for amusement, as some came on board the *Windward*. He appeared to be very much disgusted with them. In walking he picked up his feet absurdly high, and altogether looked very ridiculous. I am very doubtful as to their being of any use for sore feet, as "Nimrod" slipped very much in them, and I do not think a dog can get a sufficient grip of the snow to pull well in them. They are difficult to keep on, too, and I think some of the dogs, at all events, would gnaw them off. I have left the four on "Nimrod" to see if he will let them remain there, and I intend to try him again to morrow to see if he shapes better after getting used to them. After this we worked at the preparations for our journey until dinner-time at 7.30 P.M. In the evening I washed some clothes.

February 27th, Thursday.—While engaged in our preparations for the sledge journey after breakfast, Armitage, who had gone out for a moment, returned to say that a bear was out to the east of "Bear Berg" on the floe. As the wind was blowing in that direction, I put some blubber on the stove to try and bring him up to the hut. After some time he evidently smelt it, but catching sight of Fisher, who had gone out to keep an eye on him, he lay down, and proceeded to watch the hut. Getting rather tired of this kind of sport I had "Nimrod" slipped, and he made straight across the floe towards him. Seeing the dog making a dash at him, he suddenly became panic-stricken, and made for the edge of the water across some loosely crushed-up bay-ice. Armitage, Blomkvist, and I tried to follow him with our rifles, but could go no further than "Bear Berg," where the ice became too unsafe to venture upon. From the top of the "Berg" we could see the bear slowly meandering off west, with "Nimrod" trotting behind, looking very much like a huge sheep being driven along by a sheep dog. He had quite got over his scare, and took no notice whatever of the dog, except now and then, when he ventured too close to him, to make a rush at him.

When on the top of the berg a flock of about thirty dovekies flew over, all more or less in their winter coats. One or two were nearly white on the under parts, and one had almost got rid of the winter coat altogether. I sent the doctor down with a shot gun to try and get one, and I afterwards took a gun and also looked out for them, but neither of us saw them again. I am anxious to get specimens.

After lunch we went on again with our preparations. Fisher and I weighed out and put into labelled bags the

oats (four pounds per day) and dried vegetables (six pounds per day) for pony food. The dried vegetables are much superior to the rubbishing Russian hay we carried last year. The doctor is altering a sealskin coat for Armitage, which I took with me on my Waigatz Expedition in 1893.

At 7.45 P.M. Blomkvist came in to say that the pups were barking at a bear behind the hut. Armitage and I took our rifles and went out, but he had disappeared. It was very dark, being very misty, snowing thickly, and blowing a moderate gale from the south-west. I made a cast with "Nimrod," who had been inside the hut, and found "Mr. Bear" beyond the large boulders behind the hut standing up on his hind legs like a rabbit to get a look at us. On "Nimrod" rushing towards him he made off, occasionally stopping to make dashes at him. Although we followed the barking for over a mile, through drifts of soft snow up to our waists, until we could only very faintly see Cape Flora through the thick snow and mist, we could not get any nearer to him, and we got gradually left behind and had to return.

The extraordinarily mild weather still continues, and to-night I was actually walking with bare hands carrying my rifle, which any one could hardly credit as being possible without severe frost-bite at this time of the year on the 80° N. latitude. The temperature at 8 P.M. was +30.2° F., with a south-west gale (force 7.)

Our sledging prospects are looking very bad. Most of the party are still rather pale, and all (except myself) have been taking iron pills (Blaud's) for some time. They seem fairly well however.

February 28th, Friday.—At 8 A.M. just as we were on the point of turning out, Heyward came in to tell me

that "Nimrod" who had been loose all night, and "Jinnie's" pups, now over a year old, were barking at a bear on the floe beyond the flagstaff. I put a pair of breeches and a coat on over my pyjamas, and Armitage and I started off to try and shoot him. We separated and approached him from opposite directions; and on getting within thirty-five yards I fired and put a bullet into his neck, and as he slewed round Armitage put another into his rump. He, however, scampered off although I found afterwards that my first shot had very much damaged his lungs. I shot him again behind the left shoulder and bowled him over. He was an old he-bear with yellow teeth with one canine tooth broken. After breakfast we sledged him on to the floe at the foot of the slope at the flagstaff, up which owing to the tremendous drifts of soft snow we could not get him. We skinned him there, and sledged the skin and meat up to the hut by instalments. It was a thick mist and heavy snow all the morning, and before we had finished it began to blow a moderate gale from the north with a rapidly falling temperature, and dense, furiously driving snow, so the mild weather did not last long, which is a good thing, as warm weather is bad for sledging.

I was very glad to get this bear, as we were running short of fresh meat, and I should have been sorry to start sledging knowing that they were run close for meat at the hut.

After lunch we went on with the sledging preparations, and Fisher and I finished weighing out all the rations. I am now quite ready except for the rigging of three sledges and some more ship biscuit. The temperature fell 46° between noon and 8 P.M. with the northerly wind, and the sky cleared. This is a welcome change, but rather a sudden one. I wish it would blow hard at

the same temperature for twenty-four hours to clear out or harden the deep soft snow on the floes, which in its present state will render sledging very tough work indeed.

I photographed the bear as he lay after being shot and also with a group of my chaps standing behind him. He probably was our visitor of yesterday. He had a

SLEDGING IN A BEAR-SKIN AND MEAT

partially healed bullet wound in the flesh at the back of the head, so he has called here before.

A partial eclipse of the moon was visible this evening.

March 2nd, Monday.—We all set to work at the preparations for sledging after breakfast. Hearing "Nimrod" whining, I suspected that he could see a bear in the distance, and sent Heyward out to look round, and he returned to tell me that one was on the floe coming towards the flagstaff. Armitage and I started out with

our rifles and I gave Heyward permission to come also with a rifle. We found him near the flagstaff busily engaged in pulling down one of the flags in the "Row," and as he came up the slope I put a .303 bullet into his neck which knocked him down, but after lying for about twenty seconds apparently dead, he staggered off and Armitage and I gave him another bullet each. Heyward also fired. I took down a camera and photographed him as he lay dead. He was a male bear about three-quarters grown. I found afterwards that my first bullet had passed through the neck into the chest and had shattered the lungs causing an enormous blood clot in the chest. Either Armitage or I broke his back-bone just behind the shoulders after he tried to get away. The snow was driving fiercely at the time making shooting a little difficult. We skinned and cut him up on the floe, and sledged the skin and meat up to the house. He was in indifferent condition. His stomach was full of semi-digested seal. He showed no fear whatever of us.

March 3rd, Tuesday.—The very heavy snowfall of the last two months will make the floes bad travelling, especially with the high temperatures which we again have.

I am taking all our available dogs (sixteen). I shall of course have to rely to some extent upon shooting bears to supply them with meat. I am taking tinned beef to feed them on for a time, so as to have food which I can place in a dépôt for our future use when I kill a bear for them. I shall wait a day or two until the weather improves a bit, as with the present state of things at the best we should make slow progress, and on such days as to-day, when one cannot see twenty yards ahead for the dense driving snow, should have to camp and so should be eating our food to no purpose. Surely a change for

the better must come soon. It is very annoying after waiting for twelve months for sledging to get such abominable weather as this.

March 5th, Thursday.—About 8 A.M. Armitage, who had gone a short distance from the hut to look round, ran in to tell me that a bear was close by and had given chase to him. This is a wonderful influx of bears! I was engaged in washing and had only my pyjamas and slippers on. I took my .303 rifle and I went as I was, accompanied by Armitage. We found "Mr. Bear" on the edge of the pond close to the hut, making dashes at the dogs who were yapping around him, but advancing at the same time towards the hut in the most bold manner. I gave him a shot in the neck, which knocked him over backwards with his fore and hind feet together, and his back arched like some caterpillars do when touched. After a few seconds, however, he picked himself up and made off. Armitage and I fired three more shots each at him, and at eighty-five yards distant we finally quieted him. He was a three-quarters grown he-bear in poor condition and with nothing in his stomach. On examination we found both shoulders broken, the lungs pierced in several places, while a shot had gone through the heart, passing through the ventricles. There were also several bullet-holes in the hind quarters and ribs. He died very hard, poor beast. We cut him up after skinning him and put the meat on the top of the hut. After this we cleared some of the snow out of No. 4 canvas hut and repaired the door. I intend to put the loaded up sledges in there. We had just finished lunch when another bear was announced to be on the floe near the flagstaff. Armitage, the doctor and I started off with our rifles. We kept under cover behind the rocks by the flagstaff. He gradually approached and investigated the entrails

of the bears we had recently shot there, but showed no inclination to eat them, evidently objecting to his own race. I then ran back to the hut and got my hand camera and as he approached to within about thirty yards of me, eyeing me curiously, I took two negatives of him. This is probably the first attempt at photographing a polar bear on his native floe. Having taken his photograph I called up the doctor and Armitage who were lying out of sight about twenty yards behind, and I opened fire upon my late sitter. I knocked him over with my first shot and as usual he struggled to his feet and made off; however we soon fetched him down again. I again photographed him, and then we skinned and cut him up, and sledged the skin and meat up to the hut. He was in fairly good condition, but his stomach was quite empty. It has been snowing and driving a great part of the day, with mist and overcast sky and an east wind. The thermometer again rose to $+11^{\circ}$ F.

A fox was seen on the talus yesterday evening and the dogs were sent after him, but he escaped. He appeared considerably darker in colour than the dogs and they are far from white owing to their love for the kitchen, the floor of which is anything but clean sometimes.

March 6th, Friday.—All day until after noon it has been blowing a moderate and fresh gale from east by south, and south-east by east, and afterwards a moderate breeze from south-east. The thermometers register $+28^{\circ}.5$ and 28° again. It has been snowing heavily all day with very thick mist. Such a duration of warm weather in this latitude at this time of the year is previously unheard of I should say. Never before has an Arctic Expedition been delayed starting for sledging in March owing to the weather being too warm. Nares

kept his men back a day or two owing to excessive cold. I am now waiting for cold enough weather to enable us to make a satisfactory start. This is an extraordinary climate!

March 7th, Saturday.—The same remarkable weather continues. It has been blowing from south-west and south-east (force 1 to 2) all day, thick mist, overcast and snowing, and the thermometer at $+28^{\circ}$ F. The sledging prospects are looking worse and worse, for this weather looks as if it had come to stay; if it does, it can't be helped, however, and the only consolation in it is that the greater the difficulty the greater the fun in winning eventually. I have had everything ready now for some days, but Armitage and I made various alterations and improvements in the sledge gear and put two of the loaded-up sledges in No. 4 hut. The snow is extremely soft and wet, and a sledge drags as heavily in it as if it were being hauled through treacle. I tried a loaded sledge in it to-day. The worst of this wretched weather is that I fear people at home may be disappointed if we do not make a successful trip every spring, and do not do things at the galloping pace that sanguine people at all events, who know nothing about it, expect. Nothing succeeds like success, and anything but success is of no manner of use. Failure is always unpardonable, no matter whether it be within one's power to prevent it or not. However, I can only do my best; but such is the way of the world. I should say the floes up north are already in the boggy state we found them in early last May. They have certainly had more reason to be so now than they had then.

WEIGHTS ON LOADED SLEDGES

Sledge No. 1 (9 ft. 6 in.)

(In sledge cover)

"Odds and ends" bag	34 lbs.
3 kit bags—23 lbs., 21 lbs., 21 lbs.	65 "
Compass (prismatic) stand	5 "
Hand camera and case	7 "
Half plate camera, etc., in case and stand	22 "
6" Aluminium sextant and Artl. horizon	10½ "

(In sledge bag)

Cooking stove, tools, prismatic compass and quart pots	25 "
1 gallon of spirit, funnel, and pot	11 "
1 bag of biscuit	18 "
1 week's ration of bacon	10½ "
1 " " cheese	4 "
1 gallon spirit	11 "
Bag with contents (skinning knife, etc.)	10½ "
Drawing folios	4 "
.303 rifle in case	11 "
Militza	13½ "
Fur coat	5½ "
Total	267½ "

Sledge No. 2 (9 ft. 6 in.)

No. 6 Ration Bag	84 "
" 5 "	87 "
" 4 "	89 "
2 militzas	23½ "
1 rifle and case	12½ "
1 fur coat	5 "
Total	300½ "

Sledge No. 3 (9 ft. 6 in.)

No. 3 Ration Bag	90 "
" 2 "	90 "
Bag of dried vegetables	28 "
" "	28 "
Tent floor cloth, etc.	55 "
2 trenching tools	5 "
Total	296 "

Sledge No. 4 (9 ft. 6 in.)

11 gallons spirit and 1 small tin of whiskey	. 121 lbs.
Small line and Alpine rope . . . . .	. 9 "
Bag of biscuit . . . . .	. 19 "
1 pair ice spikes and straps . . . . .	. 2 "
Ration bag No. 1 with tools, etc. . . . .	. 101 "
1st week's dried vegetables for pony . . . . .	. 28 "
3 reindeer skins . . . . .	. 16 "
Total . . . . .	. 296 "

Sledge No. 5 (11 ft. 6 in.)

Bag of oats . . . . .	. 60 "
„ vegetables . . . . .	. 56 "
A.'s Soviek, etc. . . . .	. 17 "
F. G. J.'s „ . . . . .	. 17 "
B.'s „ . . . . .	. 15 "
Tobocks and skin breeches (F. G. J.'s) . . . . .	. 6 "
„ „ (A. B. A.'s) . . . . .	. 6 "
„ „ (K. B.'s) . . . . .	. 6 "
Small crow-bar . . . . .	. 6 "
1 ice-axe . . . . .	. 4 "
Tinned beef (dog meat) . . . . .	. 72 "
Total . . . . .	. 265 "

Spare Sledge No. 7 (9 ft. 6 in.)

216 lbs. tinned beef and 54 lbs. extra for tins (for dogs) . . . . .	. 270 "
Pony's gear, blanket, halter, and hummock chain	16½ "
2 pairs of snow shoes . . . . .	. 10 "
Aluminium wire, tobocks (F. G. J.'s) . . . . .	. 2 "
1 ice axe . . . . .	. 4 "
Total . . . . .	. 302½ "

No. 6 Sledge (9 ft. 6 in.)

Bag of oats . . . . .	. 108 "
Tinned beef (dog meat) . . . . .	. 96 "
4 bags dried vegetables of 28 lbs. each . . . . .	. 112 "
Total . . . . .	. 316 "

Average weight of seven rigged sledges 26 lbs. each.

No. 1, 267½ lbs.; No. 2, 300½ lbs.; No. 3, 296 lbs.; No. 4, 296 lbs.; No. 5, 265 lbs.; No. 6, 316 lbs.; No. 7, 302½ lbs.; total, 2043½ lbs.

One Pony: No. 1, 267½ lbs.; No. 5, 265 lbs.; No. 6, 316 lbs.; total, 848½ lbs.

Sixteen dogs: No. 2, 300 $\frac{1}{4}$ lbs.; No. 3, 296 lbs.; No. 4, 296 lbs.; No. 7, 302 $\frac{1}{4}$ lbs.; total, 1195 $\frac{1}{4}$ lbs.

384 lbs. of dog meat—1 lb. per day for sixteen dogs for twenty-four days.

Horse food: 252 lbs. of dried vegetables and 168 lbs. of oats—6 lbs. of dried vegetables and 4 lbs. of oats per day for six weeks.

Dogs: "Smike," "Snark," "Mick," "Pincher," "Lurcher," "Pongo," "Nimrod," "Misere," "Worms," "Bismarck," "Rags," "Charles," "Hyena," "Curly," "Carlo," and "Bear."

March 11th, Wednesday.—The condition of the weather is still unchanged, south-east, S.S.E., and south breezes (force 2 to 4) during the day, and the thermometers about +23° F. Overcast and misty skies. The barometers keep high (30.579 at 8 P.M.), and we appear now to be within the area of what the meteorologists call an anti-cyclone. I hardly know what to do about starting sledging as there appears to be no end to this astonishing weather. A favourable change (such as a gale to harden or drive away the snow) and a fall of temperature appears to be as far off as ever now we want it. I can fancy I can hear some people at home, on being told of this condition of things, saying: "How very fortunate for those people in Franz Josef Land to have such nice warm weather! Poor So-and-so had -40° in March. They ought to 'find' the North Pole easily." They are welcome to my share of this nice warm weather!

My sledging weights come to 2043 $\frac{1}{2}$ lbs. (exclusive of sledges), of these sixteen dogs ought to pull 1195 $\frac{1}{4}$ lbs., leaving 848 $\frac{1}{4}$ lbs. for the pony. I have seven sledges averaging when rigged with bamboo-lattice bottoms and with sledge-bags, 26 lbs. each. Six are 9 feet 6 inches long and one 11 feet 6 inches. All are of Norwegian make. I fear I cannot give the dogs more than one pound of tinned beef

per day. I am carrying 384 lbs. of it, which will last twenty-four days. I am relying upon killing bears and shall then place in dépôts any tinned meat I can, and carry the bear-meat on in place of it. The tinned meat thus cached will come in for us on some future occasion. I am taking tinned beef for the dogs with this object instead of bear-meat, which being untinned of course could not be placed in dépôt. I expect next year I shall be able materially to reduce these weights. One learns a great deal by every journey made. Better selection of foods, improved ways of doing things, and alterations generally, which mean reduction in weights, which practical experience only teaches.

March 14th, Saturday.—Our coal is now getting very low and will not last out much longer. For some time past I have had the stove let out during the day and throughout the night, and only lighted for breakfast and towards evening. A small bucketful of coals lasts us for two days in this way.

The weather shows no improvement. The winds to-day have been from west by north, N.N.W., and west (force 3 to 5). The thermometer at $+26^{\circ}$ F. Overcast and misty all day with some snow.

March 16th, Monday.—I finished my letter to Mr. Harmsworth to-day and sealed it, in the event of anything happening to us.

The following letter I handed to the doctor :

(Copy.)

“ CAPE FLORA,

March 11th, 1896.

“ R. KOETTLITZ, Esq., M.R.C.S., &c.

“ During my absence you will take sole charge of the Expedition and its affairs at ‘ Elmwood,’ and will be solely responsible.

"I look to you to see that things are carried on as heretofore, and that such work as I shall specify in particular, and other which may be for the well-being of the Expedition, be carried out.

"I expect every member of the party to obey you, to support you in every way, and to carry out your instructions. This I have little doubt they most willingly will do.

"FREDERICK G. JACKSON,
"Commanding the
"Jackson-Harmsworth Polar Expedition."

The doctor made a blanket-coat for old "Bear"—one of the best of our sledge-dogs—whose clothes look rather the worse for wear, and I fear he may suffer from the thinness of his coat when out sledging. He and "Carlo" the retriever are now thus equipped.

The weather this morning looked like improving, as the temperature fell to $+10^{\circ}$ and the sky partly cleared, showing the sun, which we have only seen two or three times since he returned in the middle of February last. Since 3.30 P.M., however, with the wind in the east, the sky has been overcast and misty, with thick snow falling and the temperature is going up again. I can't wait any longer, however, for the weather to improve, but if it isn't very bad shall start to-morrow morning and do the best we can with it.

March 17th, Tuesday.—We dug away the drifts around the doors of No. 4 hut and the stable-store, and got all the sledges down on to the floe below the flag-staff. It was not however until 1 P.M. that we had the dogs in their traces and the pony harnessed—what wouldn't I give for another pony or two! as several small matters went wrong at the last moment, and took

time to put them right, and so caused delay. The wind had been easterly until noon, with heavy, overcast sky and mist, and snow driving before a fresh breeze. But at noon in spite of the falling barometer the sky showed symptoms of breaking, and the weather looked like improving. Half an hour before we started heavy snow clouds were seen rapidly coming up, and snow began falling with a fresh breeze from east by south. We found the snow excessively deep on the floe and very soft, lying in frequent drifts. On rounding the West Point the wind increased to a moderate gale with as heavy a fall of snow as I have ever seen anywhere, and although within a quarter of a mile of Cape Flora we could not see land. We came on very rough ice at this point, with very deep snow amongst it, through which we could not see our way at all with the dense falling and driving snow. As I could see that we should not go more than three miles before dark, and as the barometer had fallen one-tenth already since we left, we held a consultation, and as every one voted for a return, which coincided with my own judgment, we started back to wait at the hut to-night, and get a fair start to-morrow. This I consider far better than camping within three or four miles of it, perhaps for a day or two with both the pony, the dogs and ourselves eating our provisions and doing nothing for it; whereas by returning, although much against my inclinations, we could start again earlier in the day, and with everything intact. I left the sledges all ready to start on the floe, but covered with our brown waterproof canvas kit covers, and tied "Tommy Rot" up near them to give notice of the approach of bears.

I took the doctor and Fisher with us to lend a hand for the first mile or two. Both the pony and the dogs

pulled their loads very well considering the very bad state of the floes for travelling.

I shall start again to-morrow morning if there are reasonable signs of improvement in the weather. The thermometers have been registering from $+11^{\circ}$ to $+13^{\circ}$ all day—far too warm.

END OF VOL. I.

